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BLUE JAY

March 1982



The *Blue Jay*, founded in 1942 by Isabel M. Priestly, is a journal of natural history and conservation for Saskatchewan and adjacent regions. It is published quarterly by the Saskatchewan Natural History Society, Box 1784, Saskatoon, Saskatchewan, S7K 3S1. CN ISSN 0006-5099.

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EDITORIAL INFORMATION: All items for publications should be addressed to the editor, Sheila Lamont at Box 414, Raymore, Saskatchewan. S0A 3J0.

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Cover: *Red Fox.* J.B. Gollop

BLUE JAY

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Snowy Owl

R.E. Gehlert

SASKATCHEWAN'S HERITAGE MARSH PROGRAM

LORNE SCOTT, Box 995, Indian Head, Saskatchewan. S0G 2K0

The Heritage Marsh announcement on 5 November 1981 will be remembered as an important landmark for wetland conservation in Saskatchewan. The agreement between Ducks Unlimited (Canada) and the Government of Saskatchewan with support from the Saskatchewan Wildlife Federation, Nature Conservancy of Canada and Saskatchewan Natural History Society will preserve and manage five major wetlands in Saskatchewan.

The famed prairie potholes of the northern great plains are one of the most diverse and productive ecosystems in the world. Unfortunately, our unique and important prairie marshes have been regarded as worthless wastelands, meant to be drained, destroyed and developed. Consequently, we have lost over 40% of our original wetlands in Saskatchewan, and we continue to lose about 2% of our remaining wetlands each year.

The Heritage Marsh Program will focus much needed attention towards our valuable wetlands. The program will provide future generations with the opportunity to experience a Saskatchewan marsh, to witness great flocks of migratory birds, and to be inspired and overwhelmed by the many sights, sounds and activities of a prairie wetland in springtime.

In addition to preserving valuable wetlands for the benefit of all forms of wildlife, the Heritage Marsh Program will address issues such as: waterfowl crop predation, flood and drought control, and sportsmen and naturalists interests.

In the Heritage Marsh agreement, Ducks Unlimited (Canada) will totally

fund construction and development costs for the marshes. The Saskatchewan Government will contribute crown land in the marshes and operate the crop damage prevention program under a federal-provincial crop damage agreement. The Saskatchewan Wildlife Federation, Ducks Unlimited, Nature Conservancy of Canada and Saskatchewan Natural History Society will all provide funds to secure land in marsh bottoms and will also purchase sufficient uplands for nesting cover and lure crops and bait stations to prevent waterfowl crop damage. These lands will be acquired through the Saskatchewan Wildlife Federation's "Habitat Trust Fund". The participating organizations will make contributions earmarked for Heritage Marshes to the "Habitat Trust Fund".

During the next five years the Saskatchewan Natural History Society will contribute several thousand dollars to the Heritage Marshes Program through donations to the "Habitat Trust Fund".

A list of 25 "key marshes" in Saskatchewan was reviewed before any Heritage Marshes were selected. To date, two projects: Ponass Lake near Rose Valley and the Thunder Creek Marshes northwest of Moose Jaw have been chosen for preservation and development. Several other very important marshes are being examined for their wildlife value. The remaining Heritage Marshes will be announced when this review process is completed.

The first Heritage Marsh, Ponass Lake, located five miles west of Rose Valley is an outstanding natural marsh, which serves as both a production and

staging area for a number of birds. When completed, this project will encompass over 7,000 acres of actual marsh plus an outlying area to be managed as nesting cover and hay land. Controlled water levels will enhance stability within the marsh and improve hay production for local residents. Lure crops and bait stations are included in the design to prevent waterfowl damage to crops.

The Thunder Creek Marshes, northwest of Moose Jaw, will be the second Heritage Marsh project. Currently a lack of water in dry years threatens many wildlife species and also affects agriculture operations. By pumping water from Lake Diefenbaker, water levels will be managed to form about 8,000 acres of marsh consisting of Paysen, Williams, Kettlehut and Pelican Lake. A guaranteed source of water will benefit many species of wildlife and local residents in the area.

The Saskatchewan Natural History Society is very pleased to be a partner in this major conservation program in Saskatchewan. Not long ago, 'hunters' and 'bird watchers' had very little to do with each other. However, as we watch our natural habitat and wildlife disappear at an alarming rate, everyone's interest is at stake. The future of sportsmen, naturalists, bird watchers, nature photographers, scientists, hikers and a great many other people depends on our ability to preserve adequate natural habitat for all forms of wildlife.

In southern Saskatchewan, we have already lost 40% of our wetlands and 75% of our natural landscape has been destroyed. Several species of wildlife have already vanished, while others continue to disappear from much of their former range. Fifteen percent of our native plants are listed as rare or endangered.

The Heritage Marsh Program provides members of the Saskatchewan Natural History Society with the oppor-

tunity to contribute to a significant conservation project right here at home. So that we can continue to enjoy our priceless natural heritage and future generations will have the same opportunities to observe, study and appreciate our vanishing wetlands, we ask for your contributions to one or both of our Society's conservation fund raising programs.

One fund raising project is the sale of Conservation Certificates for a donation of \$20.00 or more. The 9 x 12 inch color certificate is a print of a scenic painting of Saskatchewan wildlife by noted wildlife artist Fred Lahrman. The certificate, containing the donor's name, is suitable for framing and will be an attractive addition to your home or office. To obtain your Conservation Certificate send your donation of \$20.00 or more to the Saskatchewan Natural History Society c/o Lorne Scott, Box 995, Indian Head, Saskatchewan. S0G 2K0. Receipts will be issued for income tax purposes.

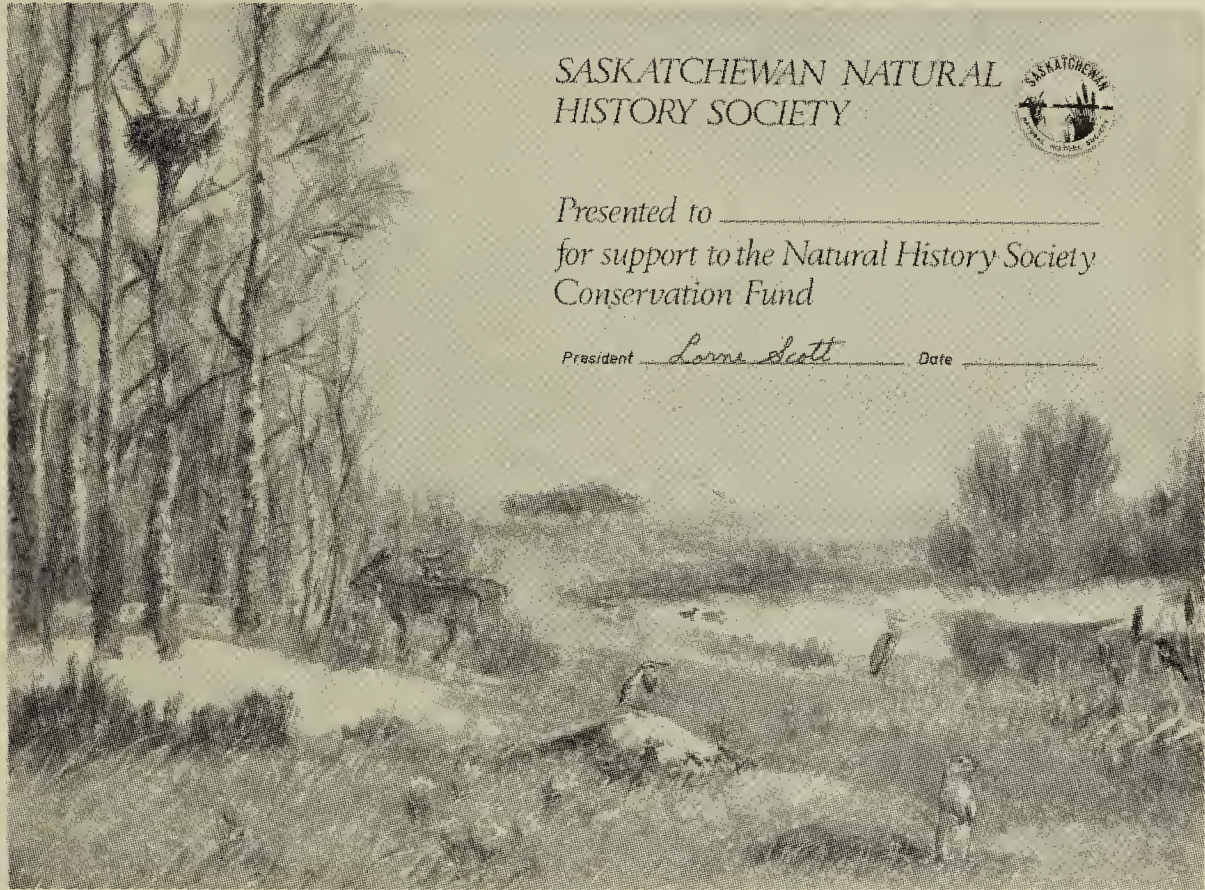
The second fund raising project is a conservation lottery. Fred Lahrman, long time member of our Society and artist at the Saskatchewan Museum of Natural History has generously donated a framed 20 x 28 inch original painting of whistling swans for first prize. Only 5,000 one dollar tickets will be sold with all proceeds going towards the Heritage Marsh Program.

In addition to Fred's painting there are nine other prizes including; nature books, framed nature photographs and a wood burning scene of waterfowl over a marsh.

Tickets are available from provincial executive members and local societies. You can obtain a book of ten tickets from Paule Hjertaas, 919 Cool Crescent, Regina, Saskatchewan. S4X 2L9. These tickets may only be sold legally within Saskatchewan. However, members from outside the province

may obtain tickets by sending payment (\$1.00 per ticket) to Paule. She will write your name and address on the tickets and return the stubs to you. (Because of

mailing and handling costs, we urge members to order a minimum of three tickets.)



Conservation Certificate



Whistling Swan painting

Fred Lahrman

LAND USE CHANGES IN THE MINNEDOSA POTHOLE REGION OF SOUTHWESTERN MANITOBA 1948-1970

RICHARD C. ROUNDS, Department of Geography, Brandon University, Brandon, Manitoba.

Introduction

Changes in land use on the Canadian prairies have long been of interest to governments, private individuals and groups, and, more recently, resource planners. Historical studies at an extensive level deal with settlement but often stop once people are on the land.⁸ Changes resulting from continuous occupation of a given area, however, have become more significant as resource availability diminishes and societal values evolve.

The purpose of this paper is to delimit and assess land use changes between 1948 and 1970 on a 23 km² area of the southeastern portion of the "Minnedosa pothole country"⁵ of southwestern Manitoba (Figure 1). The study area consists of sections 13, 14, 15, 22, 23, 24, 25, 26, and 27 of Township 13 North, Range 18 West of Principal Meridian, in the Rural Municipality of Odanah.

Physical Environment

The topography of the study area (which forms part of the Minnedosa-Reston till plains) is glacially derived.⁴ Because of its recent glacial origin, drainage is non-integrated and poor. Elevation varies only 100 feet between 1625 feet and 1725 feet above sea level. Nevertheless there is a gentle south-eastward slope of less than six feet per mile, typical of the area separating the Whitemud from the Minnedosa River

drainage systems (Figure 1). The dominant water catchment areas (potholes) are derived from in-situ glacial ice-block melting and are depositional rather than erosional features.⁵

Soils of the area are black earths derived from till and have high natural fertility. Most areas are dominated by soils of the Newdale association, which have only moderate limitations regarding crop range and potential for agricultural use. Low lying areas which contain water on either a semi-permanent or a temporary basis, however, place severe restrictions on agricultural use. Natural vegetation reflects the topography by the presence of wetland meadow and shrub associations in depressions and intermingled grassland and aspen forest (parkland) on upland areas.⁴

The climate of the Minnedosa district is characterized by short, warm summers (July $\bar{x}$ 17°C) and long, cold winters (January $\bar{x}$ -28°C). Precipitation is uniform over the area over long periods, but annual totals vary greatly. Significant local differences have been recorded in some years. Mean annual precipitation is 450 mm, about 75 percent of which falls as rain during the warm season.

Land Use History

Extensive settlement of the Minnedosa region occurred between

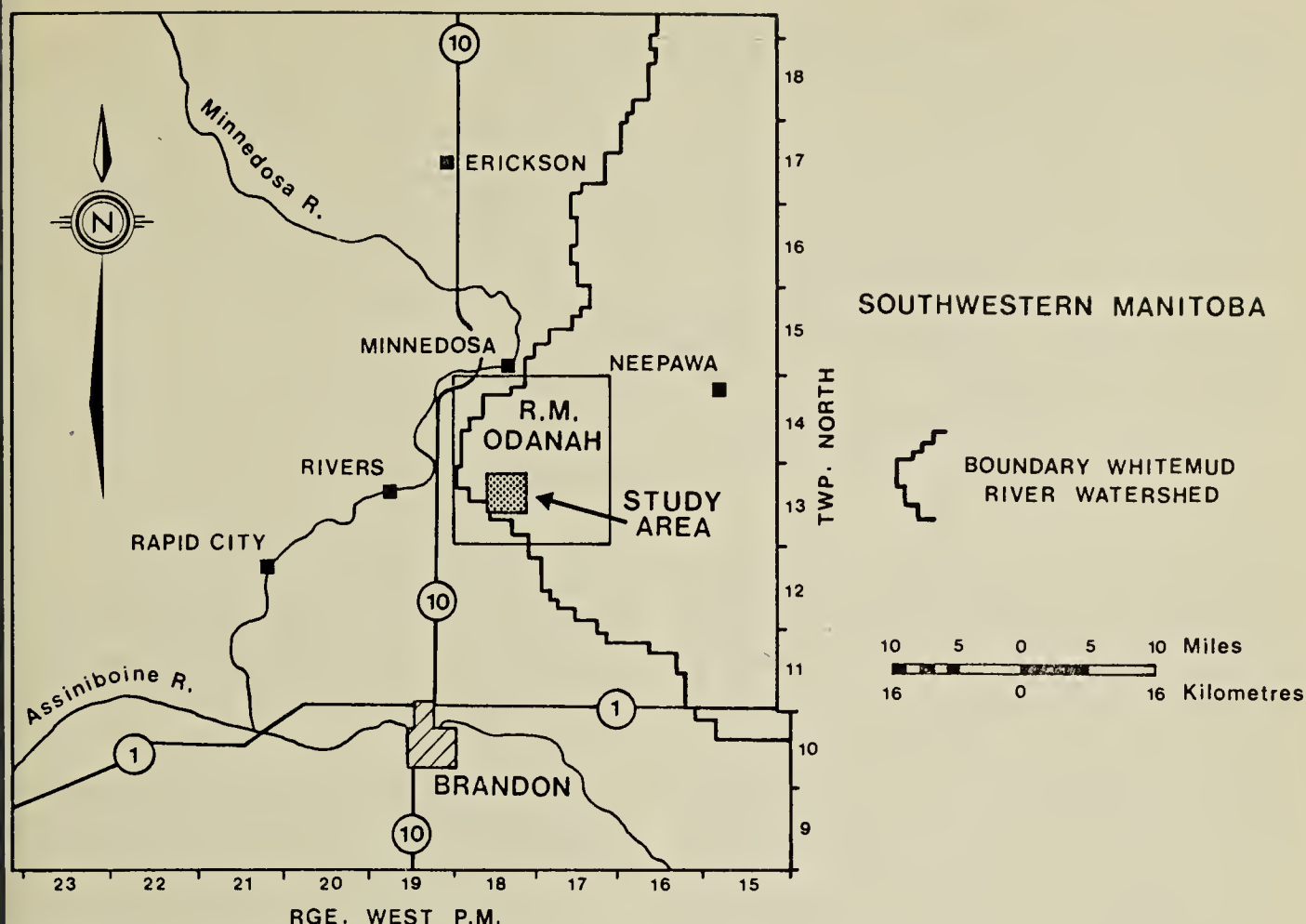


Figure 1. Location Map

1875 and 1885 and nearly all of the land was settled by 1895.⁸ Jenkins suggests, however, that the immediate study area (Rural Municipality of Odanah) was not settled extensively until after 1882, and that the area was more forested than surrounding regions.⁴ Land clearing progressed continuously from the 1880's with approximately half of the acreage in the Minnedosa region being cultivated by 1930. Clearing continued at the rate of approximately 6 percent per decade until 69 percent of the land was broken in 1964. Nearly all clearing was at the expense of forest and bushland which decreased from 39 percent to 21 percent, while wetlands decreased only from 13 to 10 percent.⁵

Methods

Air photographs of the study area were secured for 1948 and 1970. The earlier photos were taken by the Royal Canadian Air Force for the Department of Mines, Energy and Natural Resources at a scale of one inch to

1320 feet (RF=1:15840). The 1970 photos, obtained from the Canadian Department of Agriculture, were taken at a scale of one inch to 6000 feet (RF=1:7200). The scale difference was eliminated using a Sketchmaster and subsequent enlargement to a working scale of one inch to 750 feet (RF=1:9000).

The system and symbols used for land use (Table 1) are modifications of the classification for present land use of the Canada Land Inventory.³ Because the entire study area was "rural" and the CLI classification does not have a designation for farmsteads, these were placed in Category I (non-agricultural) and given the designation "F".

A major adjustment was necessary in the classification of pasture, hayland, and grazed woodlands. Because of the complexity of topography, drainage, and vegetation, improved and rough pasture were often intermingled. Similarly, grassy wetlands were often

Table 1. LAND USE CLASSIFICATION EMPLOYED

<i>Description</i>	<i>Symbol</i>
Non-agricultural-restricted to farmsteads	F
Agricultural land	
Land used for annual field crops, associated fallow	A
Improved and rough pasture, grazed woodland, and grassy wetland	P
Woodland	
Wooded land with 25% or more crown cover	U
Open water	Z

either cut for hay or grazed, or both, and small plots of woodland often occurred within pastures. Rather than attempt to separate these naturally overlapping uses, all were combined under the single designation "P" (Table 1). This adjustment is believed to be consistent with the original demarcating criteria.

Land use areas were traced on equal area maps from single photos of the nine study sections. Derived patterns were checked against stereopairs in order to refine questionable boundaries. Measurements of the final areas were made with an Alvin Planimeter previously calibrated to the scale of the working maps. Precautionary measures were taken to obviate errors and the means of three approximately equal readings were used for final values in delineated areas.⁶ Field investigation confirmed the identification of questionable boundaries on the 1970 photos.

Land Use Changes 1948-1970

Land use changes in the study area are summarized in Table 2. Cropland was dominant in all sections in 1948 and increased in overall importance by 1970. The total area increase from 55 to 70 percent reflects the greatest single area gain by any land use category.

Most of the land increase in cultivation was at the expense of pasture and woodland. Pasture area decreased in all sections, but most noticeably in 15, 23, 24, and 27 where a reduction of

approximately 50 percent is evident in each case. In total area, pasture decreased from 645 to 374 hectares, which represents an 11.4 percent drop (Table 2).

Proportionally, woodland showed the greatest losses. Extensive clearing of bush was evident in sections 14, 23, and 24, and by 1970, woodland constituted less than 10 percent of the surface cover of 5 of the 9 sections. By 1970, woodland accounted for only 4 percent of the surface area and was the lowest of all land use classes except farmsteads (Table 2).

The change in surface water area from approximately 4 to 8 percent is the only land use category other than cropland which showed an increase between the years. Eight of the 9 sections were consistent with the overall trend and great increases were obvious in sections 23, 25, 26, and 27.

The percentage of land covered by farmsteads is insignificant in both years, but decreased between 1948 and 1970. Noticeable decreases occurred in sections 22, 24, and 26, while a slight increase occurred in section 13 (Table 2).

Analysis

Because of the complex topography, clearing of land does not necessarily imply production of uniform fields for mechanized agriculture. The loss of pasture and woodland to cropland has, of course, produced larger fields, but

the large number of wetland areas precludes total uniformity. Figures 2 and 3 are presented to illustrate the nature of the field patterns as well as trends in land use change. Section 14 was selected because it was consistent in all major trends in land use and typifies the topography of the entire area.

Clearing of woodland is especially obvious in section 14 as the area had the greatest amount of forest (91.6 hectares) remaining in 1948 (Table 2 and Figure 2). The close association of woodland and pasture is evident and the recently cleared agricultural lands usually amount to extensions of fields existing in 1948 by including adjacent woodland and pasture. The pattern of wetlands is generally consistent between years, but water areas have become fewer and larger because of draining or filling with concomitant increase in nearby catchment areas.

Discussion

In a major study on the grain transportation system in the Brandon-Neepawa region of Manitoba, Channon and Morrison reported that 72.8 percent of the land in the Moore Park delivery

region was cropped in 1970-72.² The 62 farms involved included, but were not restricted to those in the study area, although the percentage of land used for crops was virtually the same. In the same area, 64.3 percent of the land was cropped in 1962-63 compared with 73.5 percent in 1968-69. The slight decrease between 1968-69 (73.5%) and 1970-71 (72.8%) could easily result from weather (water) conditions, grain prices or other temporary factors.

In the entire Brandon-Neepawa agricultural region, 63 percent of the land was cropped in 1962-63, 67 percent in 1968-69, and 64 percent in 1970-71.² The Moore Park and the present study areas, therefore, showed not only somewhat greater amounts of clearing but also a more consistent trend toward clearing. The reasons most likely relate to the fact that the Minnedosa study area has the highest long-term grain production record and lowest number of grazing animals of the entire Whitemud River watershed region.⁴ The lower percentage of land in crops in the Whitemud watershed is accounted for by increases in grassland pastures in the poorly drained areas to the north and east of Neepawa.⁴

Table 2. LAND USE CHANGES IN A 23 SQ. KM (9 SQ. MI.) AREA OF SOUTHWESTERN MANITOBA, 1948-1970.

<i>Land Use Classification (ha)</i>												
<i>Sec- tion</i>	<i>Total Area (hectares)</i>		<i>Cropland</i>		<i>Pasture</i>		<i>Woodland</i>		<i>Water</i>		<i>Farmsteads</i>	
	<i>1948</i>	<i>1970</i>	<i>1948</i>	<i>1970</i>	<i>1948</i>	<i>1970</i>	<i>1948</i>	<i>1970</i>	<i>1948</i>	<i>1970</i>	<i>1948</i>	<i>1970</i>
13	256	249	151.4	184.6	70.0	40.1	25.8	7.4	5.6	12.2	3.1	4.9
14	277	261	120.5	198.2	59.6	34.4	91.6	14.9	6.0	10.9	3.3	2.8
15	279	271	147.5	187.8	80.1	38.7	38.2	21.2	10.1	7.4	3.1	2.3
22	256	252	155.7	162.6	53.8	44.5	23.6	15.5	14.5	27.1	6.0	2.2
23	256	258	115.1	183.3	82.8	42.3	46.7	1.0	11.8	30.2	—	—
24	260	251	118.2	176.1	81.1	43.4	44.5	15.3	7.0	13.6	7.7	2.4
25	250	251	149.8	162.4	81.3	57.4	7.7	8.7	11.1	28.7	—	—
26	251	257	179.7	177.1	51.5	39.7	2.0	0.4	14.4	37.0	2.9	0.3
27	254	263	150.1	193.7	85.4	33.2	7.8	5.9	9.4	28.1	0.9	0.8
Totals	2339	2313	1288.0	1625.8	645.6	374.1	287.9	90.3	89.9	195.2	27.0	15.7
% Total Area	100	100	55.1	70.3	27.6	16.2	12.3	3.9	3.8	8.4	1.2	0.7

Kiel *et al.* studied land use changes in the Minnedosa pothole country of the aspen parkland of Manitoba.⁵ Although primarily concnered with wetlands, they noted a 21 percent increase in cultivated land between 1928-30 and 1964 (48-69 percent of total), most of which was accounted for by a 17 percent decrease in "woodlots and bushland" (39-21 percent of total). Differences in classification do not allow direct comparison, but trends are similar to this study's findings (Table 2).

Whereas increases in cropped hec-
tarage and decreases in both woodland

and pasture are evident, changes in water area (wetlands) appear to be erratic. Although noting a gradual decrease over 35 years (1930-1965) of 3 percent (13-10 percent of total area), Kiel *et al.* (1972:48) indicated major fluctuations in water surface area "... in response to wet or dry periods". Deviations of 20 percent or more in precipitation caused noticeable changes in wetland conditions, and successive wet or dry years could account for major joining of adjacent potholes or complete disappearance of some water areas.

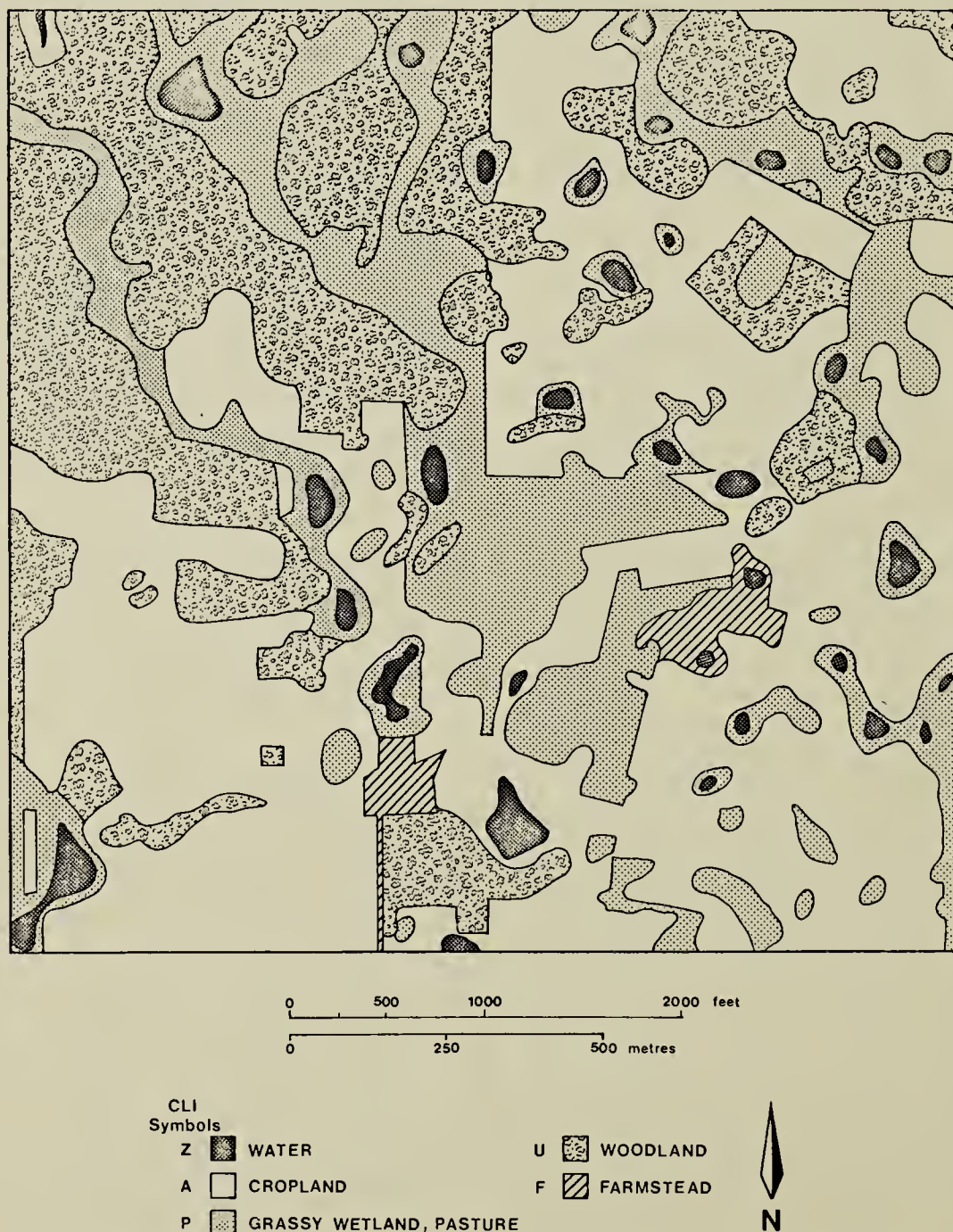


Figure 2. Land use in 1948 in Section 14, Township 13, Range 18 West

The increase in water hectarage in the study area, therefore, could be the result of short-term rather than consistent increases in precipitation. Although 1947-48 and 1969-70 were not unusually deviant in total precipitation, 20 percent variations in seasonal and annual precipitation have been recorded over short distances.* With no reporting station within the study area, the possibility of local precipitation variation cannot be ascertained, but a trend toward increased water area would probably be climatic as cultural practices are designed to eliminate wetlands if at all possible.⁵

Summary

Current land use trends and conditions in the study area are consistent with those found in related studies. Agricultural cropland dominates the landscape and is expanding at the expense of woodland and pastureland, while water area is slowly decreasing over long periods, but shows considerable fluctuation as climate changes periodically. The high quality of recoverable soils allows excellent crop production and will likely result in continued clearing of the small remaining areas of woodland and pasture.



Figure 3. Land use in 1970 in Section 14, Township 13, Range 18 West

Topographic depressions and water catchments will endure, but will slowly diminish as cultural practices integrate run-off patterns.

* Precipitation data for July 1947 to July 1948 and July 1969 to July 1970 did not deviate more than 20 percent from a normal of 452 mm for seven reporting stations near the study area.¹ Local area deviations of 50-75 mm are "frequent" and one record of 170 mm difference occurred in one growing season between Rapid City and Minnedosa, 19 km apart.⁵

Acknowledgement

Appreciation is expressed to James Andersen and Garnet Shearer for initial processing of data and to Peggy McPherson for drafting of the final maps.

¹ATMOSPHERIC ENVIRONMENT SERVICE. 1972. 1971 Annual Meteorological Summary: Manitoba. n.p., Winnipeg. 50 pp.

²CHANNON, J. W. and K. J. MORRISON. 1972. "Brandon-Neepawa Region of Manitoba". Prairie Regional Studies in Economic Geography No. 8, Economics Branch, Canada De-

partment of Agriculture. Publ. No. 71 153 pp.

³DEPARTMENT OF REGIONAL ECONOMIC EXPANSION. 1970. The Canada Land Inventory. Report No. 1, 2nd Ed., Objectives, Scope and Organization. Queen's Printer, Ottawa. 61 pp.

⁴JENKINS, G. C. 1974. Whitemud River Watershed Resource Study. Manitoba Department of Mines, Resources and Environmental Management. Winnipeg 99 pp.

⁵KIEL, W. H. Jr., A. HAWKINS, and N. PERRET. 1972. Waterfowl habitat trends in the aspen parkland of Manitoba. Canadian Wildlife Service, Report Series, No. 18, Ottawa. 61 pp.

⁶LAWRENCE, G. R. P. 1971. Cartographic Methods. Methuen & Co. Ltd., London. 162 pp.

⁷SHAYKEWICH, C. F. 1974. Climate of Southern Manitoba as it Relates to Agriculture. Publ. No. 546, Manitoba Department of Agriculture, Queen's Printer, Winnipeg. 24 pp.

⁸TYMAN, John L. 1972. By Section, Township and Range: Studies in Prairie Settlement. Assiniboine Historical Society, Leech Printing Ltd., Brandon. 250 pp.



Saskatchewan scenery

Lorne Scott

STARGAZING

STAN SHADICK, Physics Department, University of Saskatchewan, Saskatoon, Saskatchewan. S7N 0W0

Late spring and early summer evenings are excellent for stargazing. Not only has the temperature warmed up but the sight of three bright planets makes for an added bonus. The following map was adapted from one in the 1982 Observer's Handbook, Royal Astronomical Society of Canada, 124 Merton St., Toronto. It shows the positions of the stars and planets as they would appear in Saskatchewan at 12:00 midnight on 10 May 1982 or 10:00 p.m. on 10 June 1982.

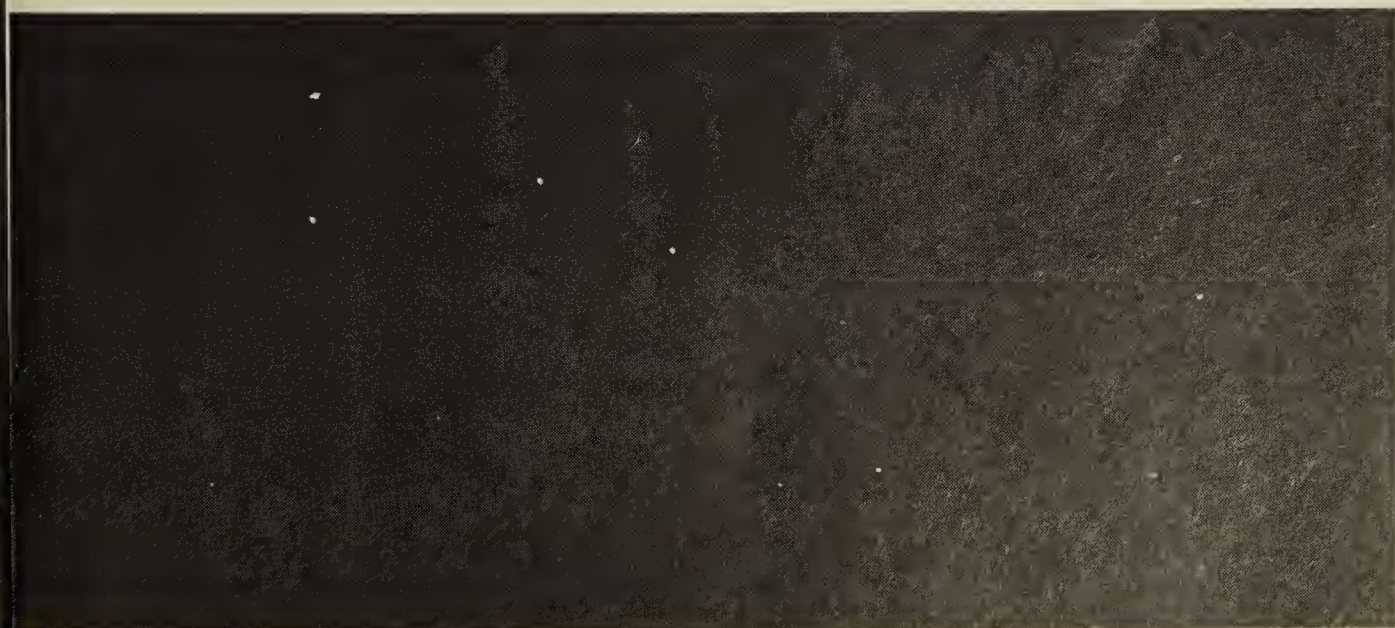
The three planets, Jupiter, Saturn and Mars, form a straight line in the southwest with the first magnitude star, Spica, located between Jupiter and Saturn. Jupiter will be the brightest of the three planets. Try looking at Jupiter and Saturn with binoculars or a spotting scope. You should be able to see four moons near Jupiter. Their names are Io, Europa, Ganymede and Callisto. If you look at Saturn you may be able to make out the ring structure.

How many constellations can you identify? Most people can locate the Big

Dipper (Ursa Major). If you look northward from the two pointer stars in the Big Dipper (opposite side from the handle) you will see Polaris, the North Star. It is located at the end of the handle of the Little Dipper (Ursa Minor). Below Polaris you should see the constellation, Cassiopeia, which appears as a giant W in the northern sky. If you follow the curve outward from the handle of the Big Dipper, you will find Arcturus, a bright star in the constellation Bootes. Arcturus is unusual in that it is a Red Giant star, many times larger than the Sun in diameter. Can you detect its reddish colour?

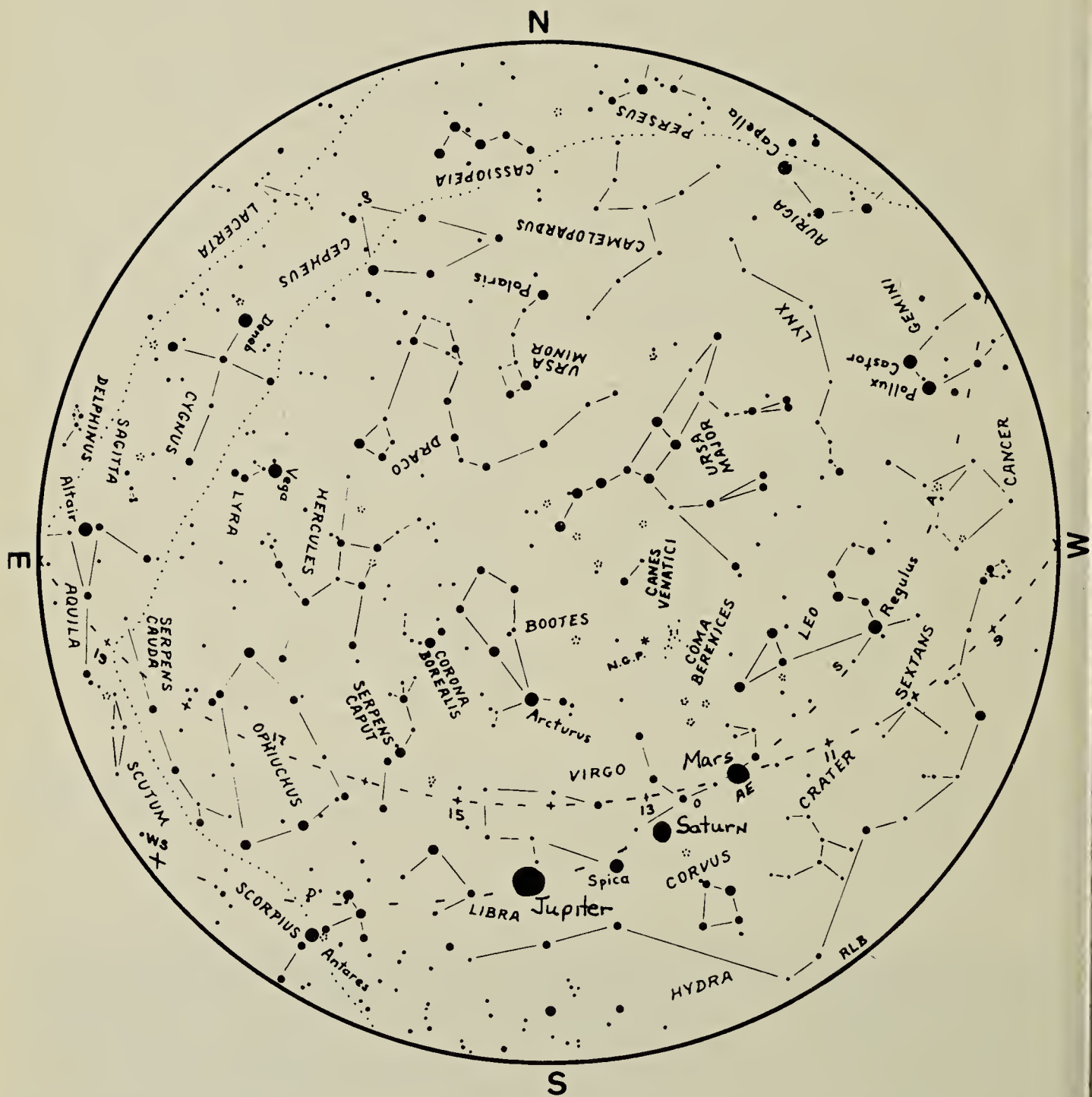
Weather permitting, a special event will take place on the evening of 5-6 July 1982. The event is a total eclipse of the moon which happens when the moon passes into the shadow of the earth. The partial phase of the eclipse begins when the moon enters the umbra at 11:33 p.m. C.S.T. The total eclipse will last from 12:38 a.m. until 2:24 a.m. The partial phase will last until 3:29 a.m.

Good viewing.



Big Dipper

F.W. Lahrman



Adapted from 1982 Observer's Handbook, Royal Astronomical Society of Canada

GIANT WATER BEETLES AT THE PAS, MANITOBA

WALTER KRIVDA, Box 864, The Pas, Manitoba. R9A 1K8

We have all seen large, black, shiny beetles under street lights at night. Some years they are common and in others almost absent. Some have a "zebra" pattern on their underside when they are lying upside-down as they often do. The females of some species have grooved backs, other females look like the males. For all their armour and ungainly looks, they are in fact good flyers, having flown out of some nearby water body — attracted by the street lights.

There seems to be two peak periods in the year when they are common in The Pas area — spring and autumn. They are rarely found in midsummer. The spring flight is rather early — towards the end of April; the autumn flight occurs in September-October.

I have collected water beetles here for 30 years now. There may be perhaps a half dozen species here. Many look alike and casual separation of one kind from another is difficult. From the dated specimens taken year after year, the two peak periods can easily be seen.

As mentioned above, abundance is variable. They are never really rare or scarce but can become uncommon some years. The weather may be a limiting factor. I have picked specimens out of the snow some springs and they will freeze solid in ice and revive later, evidently unharmed!

With the recent advent of mercury vapour street lights in The Pas area, insects now come to lights in greater numbers than formerly. They fall on the streets and are crushed in great numbers by the passing traffic. This may have long range effects on insect populations themselves and also on the predators that feed on them.

To get an idea of the numbers of the giant water beetles attracted to light, an effort was made one night to pick up all that could be found. We waited until a

good flight started. This first occurred on 26 April 1981 and continued over the 27 - 28 April. Whether the population dropped after this due to weather or due to the fact that great numbers were killed by the traffic is open to question.

On the night of 28 April with the temperature just above freezing, Fred Madrigga and I, with the assistance of six children began to collect in the Otineka Mall Parking Lot at 8:00 p.m. and continued to pick up all the specimens we could find until 11:00 p.m. By this time, the temperature had fallen so that we could all see our breaths and our hands were cold from collecting! The specimens were collected into jars of 70% iso-propyl alcohol. They were stored in quart jars with tight lids on, to prevent alcohol evaporation for some weeks. The alcohol was replaced several times as it turned brown due to dissolving fats from the specimens. In July all were pinned out, labelled and added to the insect collections.

This mass collection of 446 specimens will now be studied and attempts made to identify the species involved and the sex ratios. Comparisons will also be made with previous series collected in The Pas area. Hopefully the results of this study will be published in a future issue of the *Blue Jay*.

EDITOR'S NOTE — These beetles are of the genus *Dytiscus* of the family Dytiscidae. They are commonly called Predaceous Diving Beetles. Seven species are found in Manitoba — *Dytiscus fasciventris* (Say); *Dytiscus hybridus* (Aube); *Dytiscus cordieri* (Aube); *Dytiscus harrisii* (Kirby); *Dytiscus circumcinctus* (Ahrens); *Dytiscus dauricus* (Gebler); and *Dytiscus alaskanus* (Balfour-Browne). All of these are found in Saskatchewan, plus an additional species, *Dytiscus marginicollis* (LeConte) near the Alberta border. — R.R. Hooper

ADDITIONAL MANITOBA BRYOPHYTES

JAMES L. PARKER, Box 99, Gilbert Plains, Manitoba. R0L 0X0

For the last ten years I have collected plants for the Manitoba Museum of Man and Nature. The following bryophytes are not listed for Manitoba in C. D. Bird's *A catalogue of the bryophytes reported from Alberta, Saskatchewan and Manitoba*, 1966, and thus this may be the first report of the species for that province. Specimens have been deposited at the Manitoba Museum of Man and Nature.

Identifications, except where otherwise indicated, are by Robert R. Ireland. Locations are as named in the Manitoba Gazetteer. The term "muskeg", as used in this report, means an acidic peat bog with Black Spruce (*Picea mariana*) and Tamarack (*Larix laricina*).

I wish to express appreciation of the Manitoba Museum of Man and Nature for sponsoring this project, and to the staff of the National Museums of Canada for identifications.

Species List

Ricciocarpus natans (L) Corda, Determined by J. L. Parker. Collections from Grayling Lake and Clear Lake, both in shallow water, mixed with common duckweed.

Plagiomnium ellipticum (Brid.) Kop. N.E. of Glad Lake. Muskeg in shallow water.

Polytrichum strictum Brid. S. of Wellman Lake on beach.

Sphagnum russowii Warnst. N.E. of Glad Lake. Muskeg.

Rhizomnium pseudopunctatum (Bruch. & Schimp.) Kop. N.E. of Glad Lake. Muskeg.

Sphagnum fallax (Schimp.) Klinggr. Parker Bog. Muskeg.

Sphagnum angustifolium (C. Jens. ex Russ.) C. Jens. Parker Bog. Muskeg.

Sphagnum warnstorffii Russ. E. of Baldy Mountain. Muskeg.

Lophozia rutheana (Limpr.) M. A. Howe. Determined by L. M. Ley. E. of Baldy Mountain. Muskeg.

Plagiomnium cuspidatum (Hedw.) Kop. Gilbert Plains. Bog.

Bryum tortifolium Funck ex Brid. W. of Childs Lake. Calcareous bog.

Conardia compacta (C. Mill) Robins. Gilbert Plains. Bog.

Sphagnum subsecundum Nees ex Sturm. Parker Bog. Muskeg.

Calliergon stramineum (Brid.) Kindb. Parker Bog. Muskeg.

Bryum algovicum Sendtn. ex C. Mull. Parker Bog. Muskeg.

Callicladium haldanianum (Grev.) Crum. Parker Bog. Muskeg.

Lophocolea heterophylla (Schrad.) Dum. Det. L. M. Ley. Gilbert Plains. Bog.

Brachythecium rivulare B.S.G. Asessippi Park. Stone in brook.



Alberta muskeg

R.E. Gehlert

40th ANNUAL SASKATCHEWAN CHRISTMAS BIRD COUNT — 1981

Compiled by MARGARET BELCHER, 2601 Winnipeg Street, Regina, Saskatchewan. S4P 1H8

In the absence of Mary Houston, who is in Ann Arbor, Michigan, with her husband on his sabbatical leave, I have taken on her onerous task of compiling the Saskatchewan Christmas bird counts. During the count period (19 December 1981 to 3 January 1982) 54* counts were reported and 82 species of birds were seen, 78 of these being recorded on count day. The highest numbers of species were counted at Fort Walsh (36), Saskatoon (37), and Squaw Rapids (36).

Three species are new to the Saskat-

*55 with the belated receipt of the count from Togo.

chewan Christmas Bird Count — Double-crested Cormorant, Loggerhead Shrike, and Chipping Sparrow. The Double-crested Cormorant was observed at Squaw Rapids. The Loggerhead Shrike was seen at Fort Walsh by Ron Jensen who provided this description from his field notes: "Uniform grey, with black stripe over bill, hooking down BEYOND eye. Viewed in full sun (front-lit) with 8x40 binoculars for one minute at 30 feet." The Chipping Sparrow at Indian Head was a single bird that had been coming to Fred Skinner's feeder since the fall; he reported it on count day, but it was not seen after 26 December. With these new species, the all-time Saskat-



Female Common Merganser

Robert J. Long

chewan total for species seen on count day is now 133.

Some of the rarities of previous years have reappeared — 1 Turkey at Biggar, 3 Common Snipe at Fort Walsh, 1 Northern Cardinal at Saskatoon. Waterfowl are wintering in several localities, their presence explained by special circumstances that create open water. At Killsquaw Lake near Unity, for example, ducks are wintering at the Sifto Salt Plant. At Gardiner Dam, the reservoir was mostly open on 21 December, count day, for only the second time in nine years, and a White Pelican and three Whistling Swans were observed there with several species of ducks. Perhaps the most impressive species count was that of 52 Bald Eagles at Squaw Rapids.

In the list that follows, the names of the observers are given for each locality. Table 1 gives details of count coverage and weather, Table 2 gives the numbers seen for those species reported in more than three localities, while species seen

in three or fewer localities are reported in Table 3. Species recorded during the count period, but not on count day, have a plus sign before the number of individuals seen.

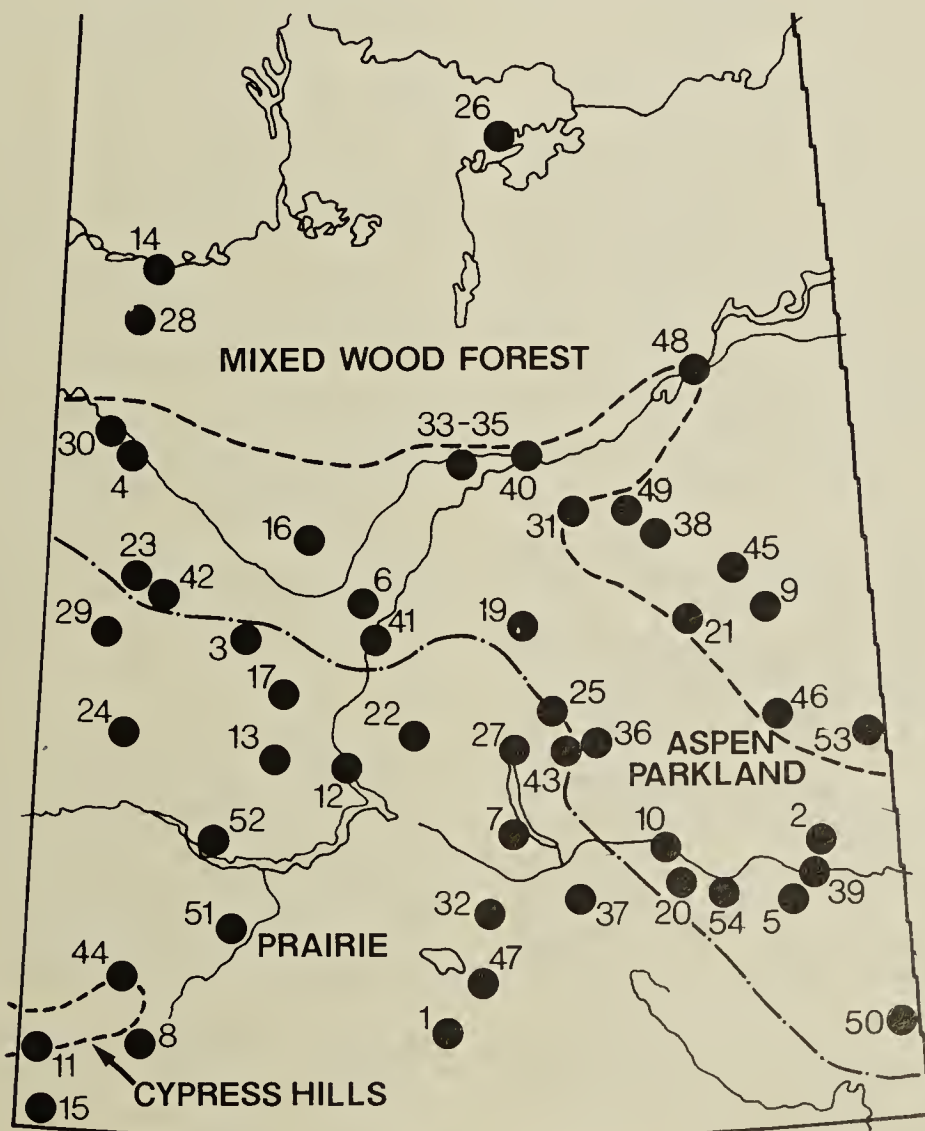
In the tables, only birds identified as to species appear. Thus the number of individuals given in the table will be less than the number actually seen on the count if any of those seen were not positively identified. In a few cases, the number of species listed at the bottom of the column will also be less than the number actually seen. For example, at Regina an accipiter (either a Cooper's or Sharp-shinned) and three blackbirds (the only ones seen on the count) would bring the published total of 26 species up to 28. On several counts, there were buteos and small owls not seen well enough to be sure of the species. Information on these, as well as dates of species seen during the count period but not on count day, and descriptions of the count areas, are available in the files.



Gray Partridge

Fred Lahrman

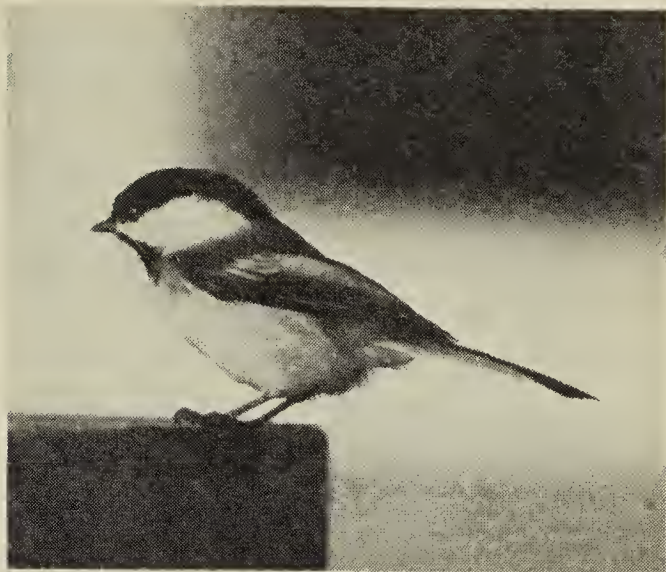
1. ASSINIBOIA
2. BANGOR
3. BIGGAR
4. BIG GULLY CREEK
5. BROADVIEW
6. DALMENY
7. DILKE
8. EASTEND
9. ENDEAVOUR
10. FORT QU'APPELLE
11. FORT WALSH
12. GARDINER DAM
13. GLAMIS-WISETON
14. GOODSOIL
15. GOVENLOCK
16. HAFFORD
17. HARRIS
18. HERBERT
19. HUMBOLDT
20. INDIAN HEAD
21. KELVINGTON
22. KENASTON
23. KILLSQUAW LAKE
24. KINDERSLEY
25. KUTAWAGAN LAKE
26. LA RONGE
27. LAST MOUNTAIN LAKE
28. LOON LAKE
29. LUSELAND
30. MAIDSTONE BRIDGE
31. MELFORT
32. MOOSE JAW
33. PRINCE ALBERT
34. PRINCE ALBERT
35. PRINCE ALBERT
36. RAYMORE
37. REGINA
38. ROUND LAKE
39. ROUND LAKE
40. SASKATCHEWAN FORKS
41. SASKATOON
42. SCOTT
43. SEMANS
44. SKULL CREEK
45. SOMME
46. SPIRIT LAKE
47. SPRING VALLEY
48. SQUAW RAPIDS
49. TISDALE
50. WAUCHOPE
51. WEBB
52. WHITE BEAR
53. WHITEBEECH
54. WOLSELEY



Count Areas and Participants

1. ASSINIBOIA. Gordon Brunt, Jack Burgeson, Alex Duxbury, Cecil T. Hayward (compiler), Donald Lemond, Don Lewis, Ted Mc-Morrine, Wilf Prentice, Ken Schuweiler.
2. BANGOR. Katie Thompson.
3. BIGGAR. Harvey Renaud, Wayne Renaud, Guy Wapple (compiler), Marguerite Wapple, Robert Wapple.
4. BIG GULLY CREEK. Wayne Harris (compiler), Sheila Lamont.
5. BROADVIEW. Dave J. Chaskavich.
6. DALMENY. Lorne, Brian, Gilbert, Ann and Mara Sperling, Lloyd Sperling (compiler).
7. DILKE. Margaret Belcher (compiler), Doug Laing.
8. EASTEND. Tom Donald, Mel Fitch, Jane Gollop, Mike Gollop (compiler), Barbara Shourounis.
9. ENDEAVOUR. Norman Harris.
10. FORT QU'APPELLE. Manley Callin (compiler), Errol Cochrane, Ethel Cockwill, Bernie and Ethel deVries, Flossie Fowler, Peter Guzak, Alma Hiebert, Ronald Hooper, Lois Lamontagne, Alice Laing, Fern McDougall, Alan Mlazgar, John Norman, Lorne and Doreen Rowell, Kay Ruud, Dorothy Williams.
11. FORT WALSH. Bob and Dixie Black, Nigel Caulkett, Chris Escott, Wayne Harris, Ron Jensen, Sheila Lamont, G. Wilkes Parsonage, Don Renaud, Wayne Renaud, Stan Shadick, Guy Wapple (compiler), Robert Wapple, Jack Wilkinson.
12. GARDINER DAM. Wayne Harris, Sheila Lamont, Wayne Renaud, Guy Wapple (compiler), Robert Wapple.
13. GLAMIS-WISETON. Brian Hones, G.L.Jones (compiler).
14. GOODSOIL. David Morton.
15. GOVENLOCK. Wayne Harris (compiler), Sheila Lamont, Wayne Renaud, Guy Wapple, Robert Wapple.
16. HAFFORD. Terry Toews, Don Weidl (compiler).
17. HARRIS. Guy Wapple (compiler), Robert Wapple.
18. HERBERT. Terry Toews, Don Weidl (compiler).
19. HUMBOLDT. Ed Brockmeyer (compiler), Dwayne Saretsky.
20. INDIAN HEAD. Cec and Betty Ashmore, Marg Barclay, Peter Barrett, Yvonne Brown, Hazel and Ernie Bugloss, Richard Escott, Joan Halford, Gord Howe, Marcella Horsman, Roy and Rose McLaughlin, Doris Pals, Marj Quigley, T. Runge, Lorne and Joan Scott, Reg and Gertie Scott, Fred Skinner, Mary Skinner (compiler), Chas Thompson, Ron Thompson family.
21. KELVINGTON. James Donovan (compiler), Chris Donovan.
22. KENASTON. Margaret, Doug, JoAnn and Lori Beckie, Lawrence Beckie (compiler).
23. KILLSQUAW LAKE. Allan R. Smith.
24. KINDERSLEY. Jean Harris (compiler), Keith Harris.
25. KUTAWAGAN LAKE. Wayne Harris (compiler), Sheila Lamont.
26. LA RONGE. Ron. Jensen (compiler), Jim Paul.
27. LAST MOUNTAIN LAKE. Wayne Harris (compiler), Sheila Lamont.
28. LOON LAKE. Frank Scott (compiler), Penny Scott.
29. LUSELAND. E.J. Finley, Estelle Finley, Kim Finley, K.J. Finley (compiler).

30. MAIDSTONE BRIDGE. Wayne Harris (compiler), Sheila Lamont, Joe Marchand.
31. MELFORT. Genevieve Belliveau, Philip Curry (compiler), Laura Smith, Tom Smith.
32. MOOSE JAW. Carl Ellis, Doug Francis, Edith Kern, Pat Kern, Cy Knight, Leith Knight (compiler), Bernice Lewis, Moray Lewis, Connie McIntyre, Henny and Arie Van Dorland, Gus Zado.
33. PRINCE ALBERT. Ansgar and Christine Aschim, Kevin Aschim (compiler), Kim Hruska, H.A. Martinson.
34. PRINCE ALBERT. Carman Dodge.
35. PRINCE ALBERT. Murray J. Kyle.
36. RAYMORE. Greta Harris, Wayne Harris (compiler), Sheila Lamont.
37. REGINA. Chris Adam, Jessie Bailey, Keith Barr, Margaret Belcher, Tom Beveridge, Frank Brazier, Walter Chapman, Eric Cooke, Jim Hines, Gayl Hipperson, John Jackson, Jim Jowsey, Elizabeth Kassian, Darlene Kauk, Greg Kraetzig, Robert Kreba (compiler), Mr. Kos, Tony Lang, George Ledingham, Christine MacDonald, John MacDonald, Brad Muir, Brian Rainey, Sarogina Ramnarina, Tom Riffel, Anneka Rummens, Helena Rummens, Bill Russon, Diane Secoy, Allan Smith, Frank Switzer, Ian Switzer, Chris Wilhelm, Janie Wilhelm, Pierre Wilhelm, Rita Wilhelm.
38. ROUND LAKE (South of Porcupine Plain). James Donovan.
39. ROUND LAKE (Qu'Appelle Valley). Doug Francis (compiler), Joe Grimeau, Pat Kern.
40. SASKATCHEWAN FORKS (North of Weldon). Kevin Aschim (compiler), Kim Hruska.



Black-capped Chickadee

41. SASKATOON. Juhachi Asai, Bob, Garth and Joyce Besant, Muriel Carlson, Nigel Caulkett, Chris Escott, Hartley Fredeen, Geoff Galloway, Mary Gilliland, Bernie and Madeleine Gollop, Bruce and John Hanbidge, Simon Heath, David, Mary, and Stuart Houston (compiler), Catherine Laratte, Donna Malcolm, Blake Maybank, Don and Jo McRobbie, Sean Morrissey, Betty and Jim Mundy, Dan Neves, Pat and Jim, O'Neil, Lynn Oliphant, John Polson, Charlie Simpson, Jim Slimmon, Helen and Larry Smith, Jeff Stewart, Judy Taylor, Jim and Shirley Wedgwood, David Wright, Kelly Wylie.
42. SCOTT. Guy Wapple (compiler), Robert Wapple.
43. SEMANS. J. Rawdon Bieber, Tony Lang, Barrie Peeke, Lloyd Saul (compiler), Shabbir Zavery.
44. SKULL CREEK. Jim Bennetto (compiler), Marjorie Mann, Michelle Schuler.
45. SOMME. Stan Back, David Black, Edwin Billeter, Florence Chase, Donald Hooper (compiler).
46. SPIRIT LAKE. Bill Anaka (compiler), Joyce Anaka.

47. SPRING VALLEY. Allan, Larry and Nick Bogdan, Flossie Bogdan (compiler), Dean Goian.
48. SQUAW RAPIDS. Wayne Harris (compiler), Sheila Lamont, Wayne Renaud, Guy Wapple, Robert Wapple.
49. TISDALE. Joyce Mohr.
50. WAUCHOPE. Sydney Barber, Dale Hjertaas (compiler), Paule Hjertaas.
51. WEBB. Stan Greenwood, Jack Ricou (compiler), Gloria Wright.
52. WHITE BEAR. Darryl, Gary and Laine Jordheim, Sig Jordheim (compiler).
53. WHITEBEECH. Tracy Hutchinson, Ida Wotherspoon, Lindsay Wotherspoon (compiler).
54. WOLSELEY SOUTH. Dale Chay, Donald Hayward (compiler).



Pine Grosbeak

Fred Lahrman

Table 1. CHRISTMAS COUNT COVERAGE AND WEATHER CONDITIONS.

LOCALITY	KILOMETERS BY VEHICLE	KILOMETERS ON FOOT OR SKIS	HOURS BY VEHICLE	HOURS ON FOOT OR SKIS	HOURS WATCHING FEEDERS	TEMPERATURE RANGE (°C)	WIND SPEED (KM/HR)	SNOW DEPTH (CM)	SKY
ASSINIBOIA	40		1			-26	24-32	20-25	partly cloudy
BANGOR	5					-10/-25	4	20	clear
BIGGAR	268	25	11	9		-10/-8	5-15	10-40	overcast, light snow
BIG GULLY CREEK	80	5	3	3		-33/-27	0-10	10-20	clear
BROADVIEW	64	3	3½	1½		-22/-24	20-24	10-20	partly cloudy
DALMENY		25		20		-22/-20	7-10	5-15	overcast, clearing
DILKE	81	6	3	2		-37/-27	5	5-30	overcast
EASTEND	96	1	5½	½		-27/-23	5	1-20	clear
ENDEAVOUR		1		3		-36/-12	0	10-12	partly cloudy
FORT QU'APPELLE	306		16		3	-15	30	15	clear
FORT WALSH	126	45	22	29		-8/ +2	0-60	10-30	partly cloudy
GARDINER DAM	240	8	13	3½		-8/ -3	40-60	10-40	overcast, snow
GLAMIS-WISETON	43	3	2	1		-8/-12	5-10	5-15	clear, becoming cloudy
GOODSOIL	5		1		8	-40/-30	0- 5	15-25	clear
GOVENLOCK	125	13	10	7		-5/ +3	0- 8	0- 5	clear
HAFFORD	75	2	3	1		-13/ -9	0- 5	4- 6	clear, clouding over
HARRIS	239	11	6	4		-28/-22	10- 0	10-40	light snow, clearing
HERBERT	10	2	1	1		-16/-16	8- 8	3- 6	partly cloudy
HUMBOLDT	30	8	1	1½	2	-18/-25	0- 0	8-10	clear
INDIAN HEAD	65	5	3	2½	1½	-2/ 0	0-25	7-15	mostly clear
KELVINGTON	15	1	2	½	½	-25/-32	15-20	20-25	mostly clear
KENASTON	48	6	2	4		-26	0	38	clear
KILLSQUAW LAKE	122	2	4½	2		-3/ -6	15-25	15	clear, clouding over
KINDERSLEY		3				-10	5	2	?
KUTAWAGAN LAKE	130	2	5	1		-31/-28	10-30	10-20	clear
LA RONGE	60	2	2	1		-26/-14	0- 6	25-50	partly cloudy, light snow
LAST MOUNTAIN LAKE	120	2	5	1		-25/-20	10-30	5-15	clear
LOON LAKE	25		½		5	-15/-10	0- 5	25	light snow, clearing
LUSELAND	88	15	2½	3	1	-26/-22	0- 0	2-20	clear
MAIDSTONE BRIDGE	85	5	4	5	1	-37/-28	5-20	10-20	clear
MELFORT	55	5	4	3	1	-22/-38	0- 8	15-20	clouding over
MOOSE JAW	144	19	7	8	2	-12/-10	5	½- 2	clear
PRINCE ALBERT (ASCHIM)		16		7	3	+4	0-60	0- 1	overcast, light snow & rain
PRINCE ALBERT (DODGE)	24		1			-2/ +2	60-70	0- 2	overcast, snow & rain
PRINCE ALBERT (KYLE)					2	-29/-26	19-19	8-10	partly cloudy, light snow
RAYMORE	165	15	8	6	1	-33/-21	0-10	6-15	clear
REGINA	615	54	30	25	2	-16/-17	20- 9	10-30	partly cloudy, fog & snow
ROUND LAKE	15	5	1½	2½		-15/-20	20-60	2- 5	clear, changing to snow
ROUND LAKE-QU'APPELLE V.	69	4½	4½	2	2	-32/-22	5-20	10-15	cloudy
THE SASKATCHEWAN FORKS		5	2	2		-27	15	10	clear
SASKATOON	536	113	45½	58	12	-27/-14	0- 7	5- 7	overcast, clearing
SCOTT	230	12	7	4		-25/-20	0-10	10-50	clear
SEMANS	120	5	3	2		-21/-30	6-20	1-35	partly cloudy, clearing
SKULL CREEK	20	6	3	2		-18/ 0	0-30	3- 5	mostly clear
SOMME	122	3	6	5	12	-10/-8	9- 5	23-25	overcast
SPIRIT LAKE	92	9	4½	4	1	-2/ +4	10-25	0- 2	mostly clear
SPRING VALLEY	66	½	3	½		-32/-16	10- 5	45-50	?
SQUAW RAPIDS	70	22	9	15		-22/-12	0- 8	10-20	light fog, clearing
TISDALE	70		1½			-10/-20		20-25	partly cloudy
WAUCHOPE	25	26	1	9½		-5	0	25-40	overcast
WEBB	192	4	4½	1½		-3/ -5	30-70	0-20	overcast
WHITE BEAR	24	45	½	8	½	-9/-21	0- 5	4- 8	clear
WHITEBEECH		5		2	8	-22/-24	1- 2	8- 9	mostly clear
WOLSELEY	55	1	2	½		-2	25-30	16-21	clear

Table 2-1. SPECIES RECORDED FROM MORE THAN THREE LOCALITIES DURING COUNT PERIOD. A PLUS SIGN INDICATES A HIGH COUNT FOR A SPECIES SEEN DURING COUNT PERIOD BUT NOT ON COUNT DAY.

SPECIES	LOCALITY	ASSINIBOIA January 5	BANGOR January 4	BIGGAR December 22	BIG GULY CREEK January 2	BROADVIEW January 3	DALMENY December 26	DILKE January 1	EASTEND January 2	ENDEAVOUR December 25	FORT QU'APPELLE December 19	FORT WALSH December 19
CANADA GOOSE											+3	
MALLARD											53	1
COMMON MERGANSER											+1	
GOSHAWK				1			1		2	+1		3
RED-TAILED HAWK						+1						1
ROUGH-LEGGED HAWK												
GOLDEN EAGLE									1		+1	2
BALD EAGLE									+1			1
PRAIRIE FALCON												1
MERLIN				1				1				
RUFFED GROUSE						1					4	1
SHARP-TAILED GROUSE				83	5	5		24		9	3	13
RING-NECKED PHEASANT		16				1			2			14
GRAY PARTRIDGE		174		93		10	7	33	+7		9	21
ROCK DOVE				202	1	60		44	21		104	5
GREAT HORNED OWL		2		2	2		1				1	7
SNOWY OWL		6		1				+1			2	
SHORT-EARED OWL									+1			
HAIRY WOODPECKER			1	2	1		1		1		2	5
DOWNY WOODPECKER			2	+1	3					1	2	6
HORNED LARK				24				20		1		13
GRAY JAY												
BLUE JAY					+1	1					6	1
BLACK-BILLED MAGPIE		21	1	110	11	9	28	35	114	6	43	230
COMMON RAVEN										20		
BLACK-CAPPED CHICKADEE			5	20	15	4	7	3	7	2	38	127
BOREAL CHICKADEE												
WHITE-BREASTED NUTHATCH											2	
RED-BREASTED NUTHATCH												7
BROWN CREEPER									+1			2
AMERICAN ROBIN									9		+1	
GOLDEN-CROWNED KINGLET												13
BOHEMIAN WAXWING			12	175		1			140		91	271
NORTHERN SHRIKE												2
STARLING				3		1			7			
HOUSE SPARROW		470	6	1120	70	2	31	190	30		236	167
RED-WINGED BLACKBIRD				4								7
RUSTY BLACKBIRD												3
EVENING GROSBEAK			4		13	4			11		24	
PINE GROSBEAK					4				2	16	+6	2
HOARY REDPOLL					3							3
COMMON REDPOLL				1378	243	280	68	82	310	9	168	68
RED CROSSBILL												1
DARK-EYED JUNCO												1
TREE SPARROW									2			16
SNOW BUNTING			300	315	96	140	83	437	+25	25	5	325
NO. SPECIES IN TABLE 3				1					1		3	3
NO. COUNT DAY SPECIES		6	8	18	13	14	9	10	15	9	18	36
NO. COUNT PERIOD SPECIES		6	8	19	14	15	9	11	21	10	26	36
NO. COUNT DAY INDIVIDUALS		689	331	3535	467	519	227	869	659	89	793	1346

Table 2-2. SPECIES RECORDED FROM MORE THAN THREE LOCALITIES DURING COUNT PERIOD. A PLUS SIGN INDICATES A HIGH COUNT FOR A SPECIES SEEN DURING COUNT PERIOD BUT NOT ON COUNT DAY.

GARDINER DAM December 21	GLAMIS-WISETON December 27	GOODSOIL December 27	GOVENLOCK December 20	HAFFORD December 19	HARRIS January 2	HERBERT December 26	HUMBOLDT December 29	INDIAN HEAD December 20	KELVINGTON January 3	KENASTON January 2	LOCALITY SPECIES
								+3			CANADA GOOSE
145								7			MALLARD
2											COMMON MERGANSER
		1						1	+3		GOSHAWK
											RED-TAILED HAWK
			1								ROUGH-LEGGED HAWK
			1								GOLDEN EAGLE
7								1			BALD EAGLE
											PRAIRIE FALCON
											MERLIN
								10			RUFFED GROUSE
10	27	2	4	1	14			7		4	SHARP-TAILED GROUSE
			9					2			RING-NECKED PHEASANT
57	12		11		54		+8	38		41	GRAY PARTRIDGE
31	100			117	229	6		8	3	27	ROCK DOVE
1			1		1	1	1	3		1	GREAT HORNED OWL
1	3				1		+1	2		1	SNOWY OWL
											SHORT-EARED OWL
		1		3			+1	5	1	+1	HAIRY WOODPECKER
		2		1	1	1		6	1	+1	DOWNY WOODPECKER
8	3		277		7					5	HORNED LARK
											GRAY JAY
		6		1	1			3			BLUE JAY
35	15	25	2	17	150	2	+10	30	+10	15	BLACK-BILLED MAGPIE
		5		3					5		COMMON RAVEN
4		5		29	4		9	15	4	+2	BLACK-CAPPED CHICKADEE
		5									BOREAL CHICKADEE
		1						1			WHITE-BREASTED NUTHATCH
								5			RED-BREASTED NUTHATCH
								+1			BROWN CREEPER
											AMERICAN ROBIN
											GOLDEN-CROWNED KINGLET
139				15	81	35		+50	+46	+12	BOHEMIAN WAXWING
											NORTHERN SHRIKE
					3				+2	3	STARLING
311	100		361	95	835	70	275	600	70	168	HOUSE SPARROW
			1					1			RED-WINGED BLACKBIRD
			3								RUSTY BLACKBIRD
		20							130		EVENING GROSBEAK
2		1		1					5	+1	PINE GROSBEAK
			1		1						HOARY REDPOLL
179			465	784	179	1	48	8	2	526	COMMON REDPOLL
								2			RED CROSSBILL
											DARK-EYED JUNCO
			3								TREE SPARROW
240	70	+25	527	24	40		+282	224	250	34	SNOW BUNTING
4			2	1			1	1			NO. SPECIES IN TABLE 3
20	8	12	17	14	16	7	4	23	10	11	NO. COUNT DAY SPECIES
20	8	13	17	14	16	7	10	26	14	16	NO. COUNT PERIOD SPECIES
1188	330	74	1676	1092	1601	116	333	980	471	825	NO. COUNT DAY INDIVIDUALS

Table 2-3. SPECIES RECORDED FROM MORE THAN THREE LOCALITIES DURING COUNT PERIOD. A PLUS SIGN INDICATES A HIGH COUNT FOR A SPECIES SEEN DURING COUNT PERIOD BUT NOT ON COUNT DAY.

SPECIES	LOCALITY	KILLSQUAW LAKE December 19	KINDERSLEY December 26	KUTAWAGAN LAKE December 28	LA RONGE December 26	LAST MOUNTAIN LAKE December 29	LOON LAKE December 26	LUSELAND December 29	MAIDSTONE BRIDGE January 3	MELFORT January 3	MOOSE JAW December 26	PRINCE ALBERT (ASCHTM) December 20
CANADA GOOSE												
MALLARD		4										1
COMMON MERGANSER												
GOSHAWK						1			+1			
RED-TAILED HAWK												
ROUGH-LEGGED HAWK						1					1	
GOLDEN EAGLE												
BALD EAGLE												
PRAIRIE FALCON											1	
MERLIN												
RUFFED GROUSE									1	4		1
SHARP-TAILED GROUSE					1	1		8	6	1		
RING-NECKED PHEASANT											16	
GRAY PARTRIDGE		4		17		50		33	+6	8	78	
ROCK DOVE		58				12		4			800	12
GREAT HORNED OWL		1		1		2	2	1	1		1	1
SNOWY OWL			1	2			+1	2			21	
SHORT-EARED OWL						4					2	
HAIRY WOODPECKER				1	2			1	2	+1	2	2
DOWNY WOODPECKER					1		1	1	1	+1	3	3
HORNED LARK			5	1		3			1			
GRAY JAY					8							2
BLUE JAY							1	2	4	1		3
BLACK-BILLED MAGPIE		5		27		35		20	7	3	40	10
COMMON RAVEN					40		12		2	1		23
BLACK-CAPPED CHICKADEE		2			14		12	1	4	1	19	26
BOREAL CHICKADEE		2			9							3
WHITE-BREASTED NUTHATCH											2	2
RED-BREASTED NUTHATCH											1	
BROWN-CREEPER												
AMERICAN ROBIN											4	
GOLDEN-CROWNED KINGLET											3	
BOHEMIAN WAXWING		50	+30					75	8	10	15	10
NORTHERN SHIRKE									+1			
STARLING						1		6			191	
HOUSE SPARROW		38	25	120		433	50	450	120	197	5620	34
RED-WINGED BLACKBIRD												
RUSTY BLACKBIRD												
EVENING GROSBEAK							40		15			155
PINE GROSBEAK									4			12
HOARY REDPOLL				7								
COMMON REDPOLL		465	2	250	20	953		225	131	3	83	
RED CROSSBILL											20	2
DARK-EYED JUNCO											1	1
TREE SPARROW												
SNOW BUNTING				61		7453		265	160	18	260	
NO. SPECIES IN TABLE 3		3			1				1		2	1
NO. COUNT DAY SPECIES		13	4	10	9	13	7	15	17	11	24	20
NO. COUNT PERIOD SPECIES		13	5	10	9	13	8	15	20	13	25	20
NO. COUNT DAY INDIVIDUALS		635	33	487	97	8949	118	1094	468	247	7186	310

Table 2-4. SPECIES RECORDED FROM MORE THAN THREE LOCALITIES DURING COUNT PERIOD. A PLUS SIGN INDICATES A HIGH COUNT FOR A SPECIES SEEN DURING COUNT PERIOD BUT NOT ON COUNT DAY.

PRINCE ALBERT (DODGE) December 20	PRINCE ALBERT (KYLE) January 3	RAYMORE December 30	REGINA December 26	ROUND LAKE December 20	ROUND LAKE - QU'APPELLE V. January 3	THE SASKATCHEWAN FORKS December 27	SASKATOON December 26	SCOTT December 31	SEMANS January 3	SKULL CREEK December 26	LOCALITY SPECIES
			425		2		1				CANADA GOOSE
			70				5				MALLARD
							1				COMMON MERGANSER
		1	1				+1				GOSHAWK
											RED-TAILED HAWK
											ROUGH-LEGGED HAWK
										+2	GOLDEN EAGLE
											BALD EAGLE
										+1	PRAIRIE FALCON
			3		+1		8				MERLIN
		+1		1	5		1				RUFFED GROUSE
		16	14	6	18	1	68	15		1	SHARP-TAILED GROUSE
		2			5		4		1	1	RING-NECKED PHEASANT
		80	261		10		35	27	5	2	GRAY PARTRIDGE
		160	771				2319	47	31		ROCK DOVE
		17	3		3		1	2	1	5	GREAT HORNED OWL
		1	8					5	+1		SNOWY OWL
											SHORT-EARED OWL
	2	3		3	2		12				HAIRY WOODPECKER
	2	+1	+1		2		13			3	DOWNY WOODPECKER
		2	1					18	4	10	HORNED LARK
				3					+1		GRAY JAY
	1	2		1	1	2	18				BLUE JAY
3	2	67	34	2	18	7	279	30	6	29	BLACK-BILLED MAGPIE
3	1			19		6	1				COMMON RAVEN
5	4	12	10	5	14	6	158	4		23	BLACK-CAPPED CHICKADEE
							1	2			BOREAL CHICKADEE
2	2				3		4				WHITE-BREASTED NUTHATCH
			2				12				RED-BREASTED NUTHATCH
			1								BROWN CREEPER
			2		2		1	1			AMERICAN ROBIN
			4				1				GOLDEN-CROWNED KINGLET
		+250	2		200		3614	22		229	BOHEMIAN WAXWING
		1					1				NORTHERN SHRIKE
		45	209				86				STARLING
	50	1430	3097		25		2589	554	118	50	HOUSE SPARROW
											RED-WINGED BLACKBIRD
		1								+6	RUSTY BLACKBIRD
	200	6		7	50		8			+15	EVENING GROSBEAK
		+5				3	12				PINE GROSBEAK
		1	15		60		52	1			HOARY REDPOLL
		1264	515		115		2291	331	267	41	COMMON REDPOLL
											RED CROSSBILL
											DARK-EYED JUNCO
							2			15	TREE SPARROW
		2608	199		30	310	20	255	339		SNOW BUNTING
			6		1	1	6				NO. SPECIES IN TABLE 3
4	9	20	26	9	19	8	37	15	9	12	NO. COUNT DAY SPECIES
4	9	24	29	?	21	8	38	15	11	16	NO. COUNT PERIOD SPECIES
13	264	5719	5672	47	565	336	11723	1314	772	409	NO. COUNT DAY INDIVIDUALS

Table 2-5. SPECIES RECORDED FROM MORE THAN THREE LOCALITIES DURING COUNT PERIOD. A PLUS SIGN INDICATES A HIGH COUNT FOR A SPECIES SEEN DURING COUNT PERIOD BUT NOT ON COUNT DAY.

SPECIES	LOCALITY	SOME December 23	SPIRIT LAKE December 20	SPRING VALLEY December 30	SQUAW RAPIDS December 24	TISDALE January 2	WAUCHOPE December 26	WEBB December 21	WHITE BEAR December 30	WHITEBEECH January 2	WOLSELEY December 20	NO. OF COUNTS PER SPECIES
CANADA GOOSE												5
MALLARD					6			40				10
COMMON MERGANSER					11							4
GOSHAWK		2	+1		10				+1			17
RED-TAILED HAWK			1		1							4
ROUGH-LEGGED HAWK		2	1		2							6
GOLDEN EAGLE				+1				1	1			8
BALD EAGLE		+1			52							6
PRAIRIE FALCON									+1			4
MERLIN		+1							1			7
RUFFED GROUSE		+2	3				1			+1	3	16
SHARP-TAILED GROUSE		13	1	16	7	8		1	31		5	36
RING-NECKED PHEASANT				+2			1					14
GRAY PARTRIDGE		30		81			29		77		28	34
ROCK DOVE		40		26			1	94	55			30
GREAT HORNED OWL		1	3	2	2		1		+1		1	35
SNOWY OWL		+1		+2	1							22
SHORT-EARED OWL				+1								4
HAIRY WOODPECKER		3	7		7		2			1	1	31
DOWNY WOODPECKER		3	8		2	2	5		+1	2		33
HORNED LARK		1		9				16	18			22
GRAY JAY		5			13							6
BLUE JAY		6	1		12	4						23
BLACK-BILLED MAGPIE		18	24	3	27	3	17	12	108		3	50
COMMON RAVEN		61	1		83	4				+1		19
BLACK-CAPPED CHICKADEE		22	22		19	3	25		2	5	1	44
BOREAL CHICKADEE		6			6							8
WHITE-BREASTED NUTHATCH		+1	2		1							12
RED-BREASTED NUTHATCH												5
BROWN CREEPER		+1										5
AMERICAN ROBIN												7
GOLDEN-CROWNED KINGLET					1							5
BOHEMIAN WAXWING		15	8					10		+4	+27	31
NORTHERN SHRIKE		+1	+1		2							7
STARLING		1	1	3					4			16
HOUSE SPARROW		124	142	262	3	10	486	400	200		27	47
RED-WINGED BLACKBIRD												4
RUSTY BLACKBIRD												4
EVENING GROSBEAK		76	11		8					10		20
PINE GROSBEAK		26	5		36					+4		19
HOARY REDPOLL		+5	8		3							13
COMMON REDPOLL		+40	104	+15	148		134	70	41	4	31	43
RED CROSSBILL												4
DARK-EYED JUNCO			+1									4
TREE SPARROW												5
SNOW BUNTING		54	66	+900	251	20	97	400	80		18	42
NO. SPECIES IN TABLE 3		2	1		10				1			
NO. COUNT DAY SPECIES		22	21	8	36	8	12	10	12	5	10	
NO. COUNT PERIOD SPECIES		33	24	14	36	8	12	10	17	9	11	
NO. COUNT DAY INDIVIDUALS		510	420	402	828	54	799	1044	618	22	118	

Table 3. SPECIES SEEN IN THREE OR FEWER LOCALITIES.

SPECIES	LOCALITIES AND NUMBERS SEEN
WHITE PELICAN	GARDINER DAM, 1.
DOUBLE-CRESTED CORMORANT	SQUAW RAPIDS, 1.
WHITSLING SWAW	GARDINER DAM, 3.
GADWALL	KILLSQUAW LAKE, 2.
NORTHERN SHOVELER	KILLSQUAW LAKE, 1.
LESSER SCAUP	FORT QU'APPELLE, +1; KILLSQUAW LAKE, 3.
COMMON GOLDENEYE	GARDINER DAM, 11; SASKATOON, 21; SQUAW RAPIDS, 97.
WHITE-WINGED SCOTER	GARDINER DAM, 1.
RED-BREASTED MERGANSER	SQUAW RAPIDS, 2.
COOPER'S HAWK	FORT QU'APPELLE, +1.
GRYFALCON	HAFFORD, 1; SQUAW RAPIDS, 1; WHITE BEAR, +1.
AMERICAN KESTREL	FORT QU'APPELLE, +1
SPRUCE GROUSE	SQUAW RAPIDS, 1.
WILLOW PTARMIGAN	LA RONGE, 2.
SAGE GROUSE	EASTEND, +1; GOVENLOCK, 5.
TURKEY	BIGGAR, 1.
COMMON SNIPE	FORT WALSH, 3.
BARRED OWL	SQUAW RAPIDS, 1; SOMME, +1.
GREAT GRAY OWL	SQUAW RAPIDS, 1.
SAW-WHET OWL	MAIDSTONE BRIDGE, 1.
COMMON FLICKER	MOOSE JAW, 2; REGINA, 9; SASKATOON, 2.
PILEATED WOODPECKER	SPIRIT LAKE, 1; SQUAW RAPIDS, 1.
BLACK-BACKED THREE-TOED WOODPECKER	THE SASKATCHEWAN FORKS, 1.
NORTHERN THREE-TOED WOODPECKER	FORT WALSH, 2; SOMME, 1; SQUAW RAPIDS, 2.
CEDAR WAXWING	HUMBOLDT, +6; REGINA, 14; SASKATOON, 8.
LOGGERHEAD SHRIKE	FORT WALSH, 1.
COMMON GRACKLE	REGINA, 1.
NORTHERN CARDINAL	SASKATOON, 1.
PURPLE FINCH	MOOSE JAW, +2; REGINA, +1; ROUND LAKE-QU'APPELLE VALLEY, +2.
PINE SISKIN	PRINCE ALBERT (ASCHIM), 7; SASKATOON, 70.
AMERICAN GOLDFINCH	REGINA, 1.
WHITE-WINGED CROSSBILL	SOMME, 6; SQUAW RAPIDS, 7.
CHIPPING SPARROW	INDIAN HEAD, (1).
WHITE-THROATED SPARROW	SASKATOON, 3.
SONG SPARROW	REGINA, +1.
LAPLAND LONGSPUR	GOVENLOCK, 4.

TOGO, Dec. 20

Again, interested people set up feeders within an 11.5 km radius of Togo and carefully recorded all observations at their feeders from 20 December to 2 January. Their best day was 20 December when the following species were recorded: unidentified hawk, 1; Great Horned Owl, 1; Snowy Owl, 1; Pileated Woodpecker, 1; Hairy Woodpecker, 4; Downy Woodpecker, 3; Blue Jay, 2; Black-billed Magpie, 2; Common Raven, 4; Black-capped Chickadee, 15; Boreal Chickadee, 24; White-breasted Nuthatch, 1; Bohemian Waxwing, 102; House Sparrow, 200+; Evening Grosbeak, 92; Pine Grosbeak, 30; Common Redpoll, 20.

In addition the following species were seen during count period: Ruffed Grouse, Sharp-tailed Grouse, Gray Partridge, Dark-eyed Junco and Snow Bunting.

Observers were: Doris and Bert Franklin, Olga and Vic Hilderman, Gladys and Geo. Izzard, Wanda and Cusie May, Elizabeth and Archie Parker, Mary and Dick Smith, and Donelda and Howard Wilson.

We regret this count was received too late to include with the other Christmas Bird Counts.



Short-eared Owl

Kathleen Morck

FORT SMITH, NORTHWEST TERRITORIES

DATE: 26 December 1981.

WEATHER: Sunny and clear; temp. -26°C ; snow 60 cm; daylight hours 0900-1600.

ROUTES COVERED: Fort Smith west along NWT Highway 5 to the Salt River Bridge; Fort Smith south along the Pine Lake road to Salt River; Fort Smith east along the Hay Camp road to Fort Fitzgerald. 140 km in 3.5 hours.

BIRDS SEEN: Hairy Woodpecker, 2; Gray Jay, 3; Common Raven, 127; Black-capped Chickadee, 2; Boreal Chickadee, 4; Red-breasted Nuthatch, 1; Pine Grosbeak, 42; Hoary Redpoll, 2; Common Redpoll, 8. Nine species, 191 individuals. (Add: Spruce Grouse, 1, Dec. 24; Snowy Owl, 2, Dec. 26.)

CONTRIBUTORS: Don Brannigan, James Darks, Bob Lewis (compiler), Dawna Lewis, Harold Pankratz, Barb Pankratz, Roger Spink, David Splauiski, Shannon Splauiski.

PRAIRIE NEST RECORDS SCHEME

The Prairie Nest Record Card Scheme requires more participants to record the progress of individual bird nests that are found in Alberta, Manitoba, Saskatchewan and the Northwest Territories. Nest record card data is used by students, federal and provincial government departments, etc., who are doing research on bird species.

Recording cards, information and a report for the 1981 nesting season can be obtained by writing H.W.R. Copland, Prairie Nest Record Card Scheme, Manitoba Museum of Man and Nature, 190 Rupert Avenue, Winnipeg, Manitoba. R3B 0N2.

A DECADE OF CHRISTMAS BIRD COUNTS IN THE ASPEN PARKLAND

KERRY and KIM FINLEY, Box 8, Luseland, Saskatchewan. S0L 2A0

As we prepare to undertake our eleventh annual Christmas bird count, we look back on a decade of records and contemplate the significance of this annual tradition that is conducted in many other locations in Saskatchewan and throughout North America. From the beginning we have attempted to keep our survey coverage as consistent as possible so that our results would be representative of the winter bird life of this area. Typically, our census involves a morning stroll in the town of Luseland, a drive on open roads within a 7 mile radius of town and a walk or ski through some typical aspen groves. We believe that our counts provide a reasonable index of winter bird life from which we can now begin to look for trends in populations.

We expect to see around 13-15 species; 12 of these have been seen consistently on almost all counts in the past decade (Table 1). Blue Jays have only recently become regular winter residents, dependent on hand outs at feeders. Some species such as Pine Grosbeaks, Evening Grosbeaks and Northern Shrikes are irregular visitors from the north. We recall well the invasion of Pine Grosbeaks in 1972 and again in 1977 when 52 were counted. Six species are rare or accidental in their occurrence and have only been seen on one occasion. Golden Eagles have been observed on 3 occasions during the count period but never actually on count day. While Great Horned Owls are certainly permanent residents in our area, they are secretive and have only been observed twice on count days.

Of the 12 commonly observed bird species, half are dependent on the

human cultural environment. Prairie towns provide a diversity of feeding opportunities and shelter for several species. Waxwings are a conspicuous component of the urban environment, very dependent on the crabapple crop. In our backyard they festoon certain preferred crabapple trees and we wonder why they seem to ignore adjacent trees that (to our eyes) appear to offer equal feeding opportunities. The tree breeders obviously neglected waxwing tastes. A prairie town in winter would be a much duller place without waxwing ornamentation or the raucous blue flash of a jay at the feeder. And who could begrudge even the smallest admiration for the pugnacious but cheerful sparrow.

The town environment is like an oasis compared to the desert landscape of fields of monoculture. Occasionally, a large flock of Snow Buntings swirls across the field or a flock of redpolls erupts from the roadside weeds, breaking the monotony. Both are dependent on slough bottoms or ditches for weed seeds that sustain them. A solitary Snowy Owl on a fencepost usually chooses to situate itself near some native grassland, such as the P.F.R.A. pasture, where rodent densities are higher than on tilled desert. Magpies, partridges, pigeons and sparrows associate strongly with farmsteads, deriving sustenance from spilled grain or cattle feedlots. Without feedlots many birds could not survive, in fact we have observed a marked decline in magpie populations in recent years as small farm feedlots have been forced out of existence by the prevailing economic climate. The magpie, too, is a defenceless victim of changing economies of scale.

Table 1. FREQUENCY OF OCCURRENCE AND AVERAGE NUMBERS OF BIRDS SEEN ON CHRISTMAS BIRD COUNTS, 1971-1980

<i>Species Observed¹</i>	<i>Frequency (No. of years)</i>	<i>Average no. per count</i>
Sharp-tailed Grouse	9	6
Gray Partridge	10	25
Rock Dove	10	24
Snowy Owl	10	1.4
Downy Woodpecker	8	0.8
Horned Lark	8	11
Black-billed Magpie	10	32
Black-capped Chickadee	9	3.3
Bohemian Waxwing	9	53
House Sparrow	10	118
Redpoll	10	61
Snow Bunting	10	379
Blue Jay	5	max. 3
Starling	4	max. 8
Pine Grosbeak	4	max. 52
Evening Grosbeak	2	max. 8
Northern Shrike	3	max. 2
Horned Owl	2	max. 3

¹Additional species recorded only on single counts include Goshawk, Merlin, Cedar Waxwing, Tree Sparrow, Golden-crowned Kinglet, Western Meadowlark and Golden Eagle.

We have also observed the decline of Gray (Hungarian) Partridges in our area — another victim of a strange chain of events that began with the introduction of the snowmobile in about 1964-65. Coyotes were mercilessly pursued by snowmogoons and were quickly eliminated from large areas. Red Foxes quickly filled the vacuum; in 1964 we saw the first specimen ever recorded in our country and by 1968 they had become common except in P.F.R.A. pastures where some Coyotes survived. Being a much more efficient and diversified predator than the Coyote, foxes multiplied, to the chagrin of the chicken farmer and also to the detriment of ground nesting birds. The fox, being more secretive and evasive than the Coyote, was not greatly affected by snowmobiles. The numbers of Gray partridge declined drastically around

the late 60's and have remained low since. Our evidence is circumstantial but we link this decline to the Red Fox and ultimately to the snowmogoons.

Aspen groves provide relief and shelter from the wind blown fields. The shelter is critical thermal habitat for small creatures like the chickadee. Stepping into an aspen grove when the wind chill factor is 2200 (−24°C with a breeze) in the open is an instructive lesson in heat conservation that could be well applied to prairie living. Only those groves of sufficient size and maturity will harbour chickadees — usually a resident pair eager to check out a human intruder. There are few environments as quiet as a winter aspen grove and the downy woodpecker is quick to reveal itself by its busy tapping. The chickadees and woodpeckers are

also subject to changing economies of scale as the bulldozer paves the way for the megatechnology of monotonous monoculture.

On our eleventh Christmas bird count, we record 15 species. Redpolls are abundant this year as is expected every alternate year when the birch seed production fails in the northern forest. Magpies continue to show a downward

trend concomitant with cattle prices. Chickadees are notably absent this year and another large aspen grove has been bulldozed from our census route. Partridges remain low — no wonder since Bill Fischer, a local trapper, reports taking 44 foxes in the last two months within a mile radius of town. A Hairy Woodpecker is new to our list of winter species that now totals 26.



Red Fox

Ron Jensen

RUFFED GROUSE

Photographs by *Ken Lumbis, Box 516, Grande Prairie, Alberta. T8V 3A7*





GREAT BLUE HERONS AND RACOONS AT NICOLLE FLATS

DALE G. HJERTAAS, Wildlife Branch, Saskatchewan Tourism and Renewable Resources, 3211 Albert Street, Regina, Saskatchewan. S4S 5W6

Introduction

Great Blue Herons have nested at Nicolle Flats, on the banks of the Qu'Appelle River, since at least 1883. Mr. Doug Nicolle, who still farms in the area, reports that the colony was active when his grandfather, Charles Nicolle, homesteaded in the area that year. The colony has been occupied each year to the present.

The first published account of the colony was 65 nests in 1970.¹² In 1975 there were 70 nests, over half of which contained young³ but this was reduced to 52 platforms, some dilapidated, of which only 16 had young in 1976 (pers. comm. David Hatch). I located 23 active nests during my first visit to the colony on 8 May 1978. Disappointingly, when I returned on 18 June all had failed.

During 1978 and 1979 I, with other members of the Qu'Appelle Fish and Wildlife team, were developing Nicolle Flats as a wildlife area. Maintenance of the heron colony was an important objective for the area. I therefore began searching for the cause of the population decline since 1970, the total reproductive failure in 1978 and a way to halt the population decline.

I soon learned that the Great Blue Heron population along the entire Qu'Appelle Valley had declined since the 1960's. Vermeer and Anweiler reported four active colonies totalling 121 nests along the Qu'Appelle Valley in 1970.¹² They also reported 3 colonies which had been abandoned in the Qu'Appelle in the 1950's and 60's. I resurveyed the Qu'Appelle Valley by aircraft on 16 May 1979 but could find

only the Nicolle Flats colony, now reduced to 7 nests, an 8 nest colony near Round Lake, and a lone nest near Craven for a total of 16 nests. This is only 13% of the nesting population present 9 years earlier!

One of three alternate hypotheses, human disturbance, predation by Racoons, or infertility due to pesticide poisoning, appeared most likely to explain the heron population decline at Nicolle Flats and elsewhere in the Qu'Appelle.

Disturbance

Human disturbance seems unlikely due to the isolation of the Nicolle Flats colony. The colony was only disturbed in one year, 1973 or 1974, when people drove into the area, crossed a beaver dam, and shot at least 20 young herons out of the nests. There were approximately 60 active heron nests at that time (personal communication Doug Nicolle). This isolated incident, although unfortunate, does not explain the continuing decline of the heron colony.

Pesticides

Residues of some pesticides produce thin shelled eggs which often break during incubation and fail to hatch. Faber et al investigated the effects of organochlorines and mercury on herons in California.² Egg shell thickness of California Great Blue Herons has declined significantly since 1947, Table 1 also shows that there was a significant difference in thickness between shells which broke during incubation and those which hatched successfully.

Table 1. GREAT BLUE HERON EGG SHELL THICKNESS FROM CALIFORNIA AND NICOLLE FLATS

<i>Category of Egg</i>	<i>Mean Thickness (mm)</i>	<i>Confidence Limits</i>
Pre 1947 specimens ²	0.396	0.390 - 0.402
Hatched California shells ² 1969 and 1970	0.365	0.354 - 0.376
Broken California shells ² 1969 and 1970	0.326	0.310 - 0.346
Nicolle Flats, 1978	0.369	0.360 - 0.378



Great Blue Heron

Doug Gilroy

I collected egg shells from the failed Nicolle Flats colony in 1978. Egg membranes were removed and thickness of 99 shell fragments determined with Mitutoyo dial callipers with gradations to .05 millimeters. I then compared shell thickness at Nicolle Flats with those from California. Confidence limits were calculated for the sample. Non-overlap of confidence limits indicated a significant difference.²

Table 1 shows that shells at Nicolle Flats have the same thickness as those in nests hatched successfully in California in 1969 and 1970. Nicolle Flats shells are significantly thinner than pre-pesticide era shells from California, but significantly thicker than those shells which broke during incubation. Egg shell thinning due to pesticides may therefore be occurring at Nicolle Flats, but is not severe enough to be responsible for the colony failure.

Some poisons, such as mercury, do not cause egg shell thinning. I was unwilling to sacrifice any eggs or birds for analysis so could not test for presence of these toxins.

Predation by Racoons

Hatch & Lieffers suggested that predation by Racoons may be reducing nest success at Nicolle Flats and commented that predation of heron nests by Racoons was known in Manitoba.⁴ In California several Racoons learned to climb the redwood trees in which Great Egrets and Great Blue Herons nested at Audubon Canyon Ranch. Nest losses were heavy until the Racoons were trapped and relocated.⁹ Lopinot actually observed a Racoona climb to a nest 50 feet above ground and feed on heron remains.⁷ Observed or suspected Racoona predation on heron and egret nests has also been reported in Texas, Georgia and North Carolina.^{10 11 1}



Lindsay setting up Racoona guards at Nicolle Flats heronry.

In most areas heronries are in locations which reduce the risk from mammalian predators. Florida heronries are usually located over water or on other areas not frequented by Racoons.⁶ Often alligators live under heron colonies, scavenging waste which might attract Racoons and effectively deterring Racoons from visiting the colony. Nests in other areas are also often in over water or island situations. The colony destruction by Racoons in North Carolina was due to low water levels which allowed Racoons to reach a normally isolated colony.¹

In Saskatchewan the absence of tree climbing mammalian predators has allowed Great Blue Herons to prosper even though isolated island and over water nest sites are limited. Racoons are a recent addition to the Saskatchewan fauna, the first recorded specimen having been taken in 1919. Racoons first colonized the Qu'Appelle and Souris River Valleys. They gradually increased in numbers and extended their range north and west, but the average annual fur harvest in Saskatchewan did not exceed 100 pelts until the 1960's.⁵ By 1975 Racoons were abundant in the Qu'Appelle Valley east of Buffalo Pound Lake.⁸ The Raccoon population increase in the Qu'Appelle thus appears to be coincident with the Great Blue Heron population decline.

Presence of a high Raccoon population at Nicolle Flats was confirmed in 1978 by the abundance of feces and tracks. Even though analysis of feces failed to show evidence of nest robbing I began testing of a "raccoon guard" for nest trees in 1978.

Staff at the Saskatoon Forestry Farm Park obligingly placed a six foot maple post, 9 inches in diameter, in the cage of their four Racoons. The Racoons were fed on a platform at the top of this post for two weeks. On 11 October, I placed a "raccoon guard" on the post. This

"raccoon guard" consisted of a 36 inch sheet of stainless steel wrapped around the post from 5 inches above ground to 37 inches above ground. The metal was overlapped and the joint nailed every 3 or 4 inches to ensure there were no cracks to provide toe holds. During the next two days the Racoons were unable to climb the post to reach their food on the platforms and the experiment was terminated. The "raccoon guard" worked!

In March 1979 Lindsay Surbey and I placed "raccoon guards" on 21 nest trees in the Nicolle Flats colony. We also cut off low branches or stumps which might offer a bypass route into the trees. The "raccoon guards" were left loose enough to allow for some future tree growth.

Due to my underestimate of the amount of sheet metal required, several trees at the eastern edge of the colony, which had not been occupied in 1978, were left unguarded. During the winter of 1980 wildlife staff placed additional "raccoon guards" to protect all trees in the Nicolle Flats colony. In addition all guards were painted a dull brown as the shiny metal guards had been clearly visible through the trees in 1979 and may have disturbed the herons.

I surveyed the colony by aircraft in May of 1979, 1980 and 1981 flying at sufficient altitude that no herons flushed. All herons observed sitting or standing on nests were counted. This may produce a slight over estimate as mates perched on adjacent old nests would be counted as nest attempts.

I checked nest success at the colony each year from the ground. I was easily able to identify nests with young by presence of "white wash" below the nest. I counted the number of young visible in each nest, but did not climb trees to ensure the counts were accurate. Counts of young are therefore minimum estimates of production.

Table 2. GREAT BLUE HERONS NESTING AT NICOLLE FLATS 1978 - 1981

<i>No Racoon Guards</i>	1978	1979	1980	1981
Nests Initiated	23	6	0	0
Nests Successful	0	0	-	-
Young Produced	0	0	-	-
Young/Successful Nest	0	0	-	-
<i>With Racoon Guards</i>				
Nests Initiated	-	1	8	15
Nests Successful	-	1	7	12
Young Produced	-	4	16	28
Young/Successful Nest	-	4	2.3	2.3



Racoon guards at Nicolle Flats heronry.

Table 2 shows that during 1978, 1979, 1980 and 1981 herons made 29 nest attempts in unguarded trees, none of which were successful. During the same period 20 of 24 nest attempts in trees with "raccoon guards" were successful and produced a minimum of 48 young.

Discussion

This difference in nest success definitely implicates predation as a cause of the decline in the Nicolle Flats heron colony. Raccoons are implicated as the only likely tree climbing predator in the area. In addition the coincident increase in Raccoon populations and decline in herons throughout the Qu'Appelle suggests that predation by Raccoons is responsible for the Great Blue Heron population decline throughout the Qu'Appelle Valley. This decline is continuing. Failure of the Round Lake colony in 1980 leaves the Nicolle Flats colony as the only known Great Blue Heron colony in the Qu'Appelle. "Raccoon guards" were erected at the Round Lake colony in the spring of 1981 but I was unable to inspect the colony to determine if the herons returned.

The decline of the heron population in the Qu'Appelle indicates that similar declines may occur as the Raccoon population increases in other areas. Naturalists should try to check the success of heron colonies annually, especially in the south eastern part of the province where Raccoon populations are highest.

Acknowledgement

I wish to acknowledge the assistance of Paule Hjertaas and G. W. Pepper, who reviewed the manuscript, and Lindsay Surbey, Dave Arneson, Lindy Peters and Phil Haughian, who erected the raccoon guards.

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CALGARY AREA BLUEBIRD TRAILS — 1981

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This article gives the results for 1981, the third year in which members of the Calgary Field Naturalists' Society have been carrying on the monitoring of Harold Pinel's Calgary Bluebird Trail. As in the past two years, results are added for Andrew Stiles and Blake Stillings trail. However, older houses are being replaced, and non-productive sections are being modified or dropped. Two monitors added short side loops and one monitor dropped a section that was House Sparrow prone. For interest, a new trail has been added, that of Nancy Murray and Evlyn Annand in the Seebe area.

Table 1 gives an idea of the percentage of Mountain Bluebirds and Tree Swallow nests with their statistics on eggs and young. In addition, some incidental information is given such as House Sparrow nests, House Wren nests, houses used more than once, boxes vandalized and boxes not used.

In most sections of the trail, bluebirds were down from last year's record year. Although the spring started early with a warm early May, the bluebirds didn't seem to follow through in large numbers. To quote from Ann Machin's summary "On the first visit (24 May) a number of boxes looked as though bluebirds might be starting to nest, but subsequent visits showed no further evidence, or else taken over by Tree Swallows." Ann also reported construction activities in the section of her trail where bluebirds are expected which may have deterred some of them. Other monitors noted places where one or two bluebird eggs were laid but Tree Swallows later took over the nest. There were no instances this year as in the past two where Tree Swallows had

raised bluebird young in cases such as this. Declines in bluebird population were, in some sections, made up for by an increase in Tree Swallow populations, although Tree Swallow total numbers were also down. July was generally a rainy month and this resulted in a much lower per centage of second broods than usual. This is another factor in the lower numbers of bluebirds.

Nancy Murray and her partner Evlyn Annand set up 39 houses along the Trans-Canada highway between Seebe and Canmore. These houses yielded two bluebird nests and two Tree Swallow nests, both near Seebe. Most of the remainder were empty except for one squirrel nest. The reason for the low occupancy may be in part because the birds didn't find the boxes. This usually happens to some extent during the first year of a trail. Another reason may be that the birds don't breed from Exshaw to Canmore where there is little grassland available. We may have the answer next year.

Table 2 lists birds banded on the Calgary to Millarville, Priddis and East Didsbury areas and will form a good population to check for bands when they return next year. No birds banded in previous years were reported.

Highlights

Perhaps the most interesting happening of the year was reported by Kay Morck. She set up two nest boxes at a friend's acreage near 69th Street and 17th Avenue S.W. One of the nests was occupied by a pair of bluebirds, and the male had a bad leg which dangled uselessly. Kay watched him over the

Table 1. RESULTS OF 1981 MONITORING OF CALGARY AREA BLUEBIRD TRAILS

Trail	Harold Pinel	Blake Stillings*	Andrew Stiles		Nancy Murray Evlyn Annand Seebe- Canmore	Total
			<i>Priddis</i>	<i>Didsbury</i>		
No. of boxes	213	313	62	116	39	743
Miles of line	111	130	40	65	21	367
Bluebird nests	44	83	42	32	2	203
% Successful nests	89	80e	71	81	50	80e
No. Eggs	219	473	217	170	11	1090
No. Young Fledged	160	329e	139	125	5	758e
Clutch Size	4.98	5.70	5.17	5.31	5.5	5.37
Young/Successful nest	4.10	4.98e	4.63	4.81	5.0	4.68e
Banded			32	14		46
Tree Swallow nests	142	193	27	68	2	432
% Successful nests	80	82e	93	74	100	83e
No. Eggs	748	1070	134	375	9	2336
No. Young Fledged	531	805e	116	296	9	1757e
Clutch Size	5.27	5.54	4.96	5.51	4.5	5.41
Young/Successful nest	4.66	5.06e	4.64	5.29	4.5	4.94e
Banded			1	95		96
House Sparrow nests	17	20	3	19	0	59
Wren nests	1	2	2	4	0	9
Boxes used more than once	17	?	12	10	0	39+
Vandalized	5	8	1	3	2	19
Boxes not used	16	5	5	1	34	61

*Blake Stillings' count does not include second broods and young fledged are estimated as he was unable to do his last count.

e Numbers estimated

season and noted the difficulty he had getting in and out of the nest to feed the young. She took some excellent photographs of him in a poplar tree, showing the bad leg. Remarkably this pair raised eight young, which is unusually high for bluebirds as five or six is more normal.

Ray Woods reported an instance of vandalism on his trail where someone had pushed a large rock into one of his

boxes. This had spread-eagled the sides apart. When he threw the rock away (quite annoyed, naturally) he noted that a female bluebird was sitting on eggs under the rock with just barely enough room to get in and out. He repaired the box but reported that later predation had prevented this box from being successful.

Darlene Warbanski caught a male

Table 2. BANDING SUMMARY

	Adults	Young	Total
Bluebirds	6	40	46
Tree Swallows	26	68	94

bluebird in the second house she monitored independently east of Didsbury. This is an unusual event as males are not often found in the nest. Darlene found the bird difficult to hold but did note that he had no band. As well, the nest had ten eggs in it! Later monitoring revealed that this box was unsuccessful.

Quite a few nests of first time bluebirds were noted on the East Didsbury section of 116 houses. A count on

the first monitoring on 30 May revealed 11 houses which bluebirds had appeared for the first time, but 12 houses where House Sparrows appeared for the first time. This would indicate that both species can spread. Most of these houses have been in place for two to four years.

Blake Stillings reported three chickadee nests on his trail this year.



Tree Swallow

Jim Sutherland

TWENTY-FIRST ANNUAL NESTBOX REPORT FROM BRANDON, MANITOBA

MRS. JOHN LANE, 1701 Lorne Avenue, Brandon, Manitoba. R7A 0W2 and
MAMIE McCOWAN, BARBARA ROBINSON, HAZEL PATMORE and ANN SMITH

The year 1981 was an exciting and rewarding one for the group of dedicated volunteers, "The Friends of the Bluebirds". The usual spring and fall get-togethers took place at the home of the co-ordinator, Norah Lane. Both meetings were well attended and new members were enrolled.

Janaury saw the first of many meetings of the planning committees for the Great Northern Plains Conference of the North American Bluebird Society. Lorne Scott, Indian Head, and Norah Lane, both Canadian directors of North American Bluebird Society, had responded to a request from headquarters in Maryland to organize a bluebird conference. With permission to hold it in Brandon University and with Dr. Roger Smith, Department of Zoology, as chairman of the committees formed from members of The Friends of the Bluebirds, Brandon Natural History Society, and faculty and staff at Brandon University, a fine program was planned for June 25-28.

One hundred and sixty-six people registered, representing nine American states (Maryland, Pennsylvania, Wisconsin, Virginia, Georgia, Missouri, Indiana, Montana and Oregon) and four Canadian provinces (Ontario, Manitoba, Saskatchewan and Alberta); and there were two people from England.

Field trips along the Carberry-Spruce Woods nestlines to observe nesting Mountain and Eastern Bluebirds and Tree Swallows and on to the Souris River Bend Wildlife Management Area to observe other species gave the conference a good start. Lectures, a nature art exhibit, displays of nestline maps and bluebird-related items, books and

souvenir shop, and a wind-up banquet, were other highlights, interspersed with coffee breaks and exchanges of bluebird experiences.

Dr. Lawrence Zeleny, founder of the North American Bluebird Society, Mary Janetatos, Executive Director, and Chuck Dupree, Treasurer, all of Maryland, spoke of the history of bluebird conservation in North America and told of the work of the Central Office, Maryland. Speakers on the topic of bluebirds in their areas were Herbert Prescott, Portland, Oregon; Duncan Mackintosh, Lethbridge; Norah Lane, Brandon; Don Stiles, Calgary; Art Aylesworth, Ronan, Montana; Lorne Scott, Indian Head; Richard Rounds, Brandon. Adding variety with lecture topics on other bird life were Phil Horch, Winnipeg; Stuart Houston, Saskatoon; Fred McGuinness, Brandon; Robert Nero, Winnipeg.

Leaders for the field trips, including those special Sunday morning ones, were Peter Sawatzky, Barbara Robinson, Herb Goulden, Mamie McCowan, Kae Longrigg, Cliff Findlay and Dick Rounds.

Meeting bluebirders from across the continent made us aware of the value of the North American Bluebird Society. And because Brian Shantz of Nanton, Alberta, is our new Canadian director, we look forward to a possible regional meeting farther west.

In our local area three important research projects on our nestlines have added scientific interest and results.

Hugh Munro completed his Master's program. A copy of his thesis published by the University of Manitoba, titled "An

Analysis of Use of Nest Boxes by Mountain Bluebirds in Southwestern Manitoba'', is in our hands, a gift from him.

Two summer projects set up by Dr. Richard Rounds and Dr. Roger Smith, Brandon University, were carried out by undergraduate students. Judy Hickson, Geography student, experimented with micro-climate of artificial nest boxes. There were 72 boxes of 24 different designs. Linda Macson, Zoology student, made observations of the behavior of Mountain Bluebirds at three nest boxes in each of two different habitats. It is hoped that the results of the research by these two students will be published.

The *Auk* accepted and published a paper "The Fertility of Albinistic Eggs", by Richard Rounds, Donita and Hugh Munro.

The *Wilson Bulletin* published "A Review of Hybridization in *Sialia*", by Richard Rounds and Hugh Munro.

A CKX-TV half-hour Wildlife Special featuring Dr. Richard Rounds on the bluebird nestlines in Southwestern Manitoba, proved a huge success. CKX has received requests from viewers to have it repeated over their stations.

Reporting on the work of The Friends of the Bluebirds, a summary of nesting success in monitored boxes during 1981 is given in Table I. The numbers are similar to those reported for 1980 but the two years are not directly comparable as some of the nest boxes and nestlines were different in the two years. The apparent increase in mice is due to increased reports outside of the bluebird nesting season from the early spring and the fall clean-up of boxes.

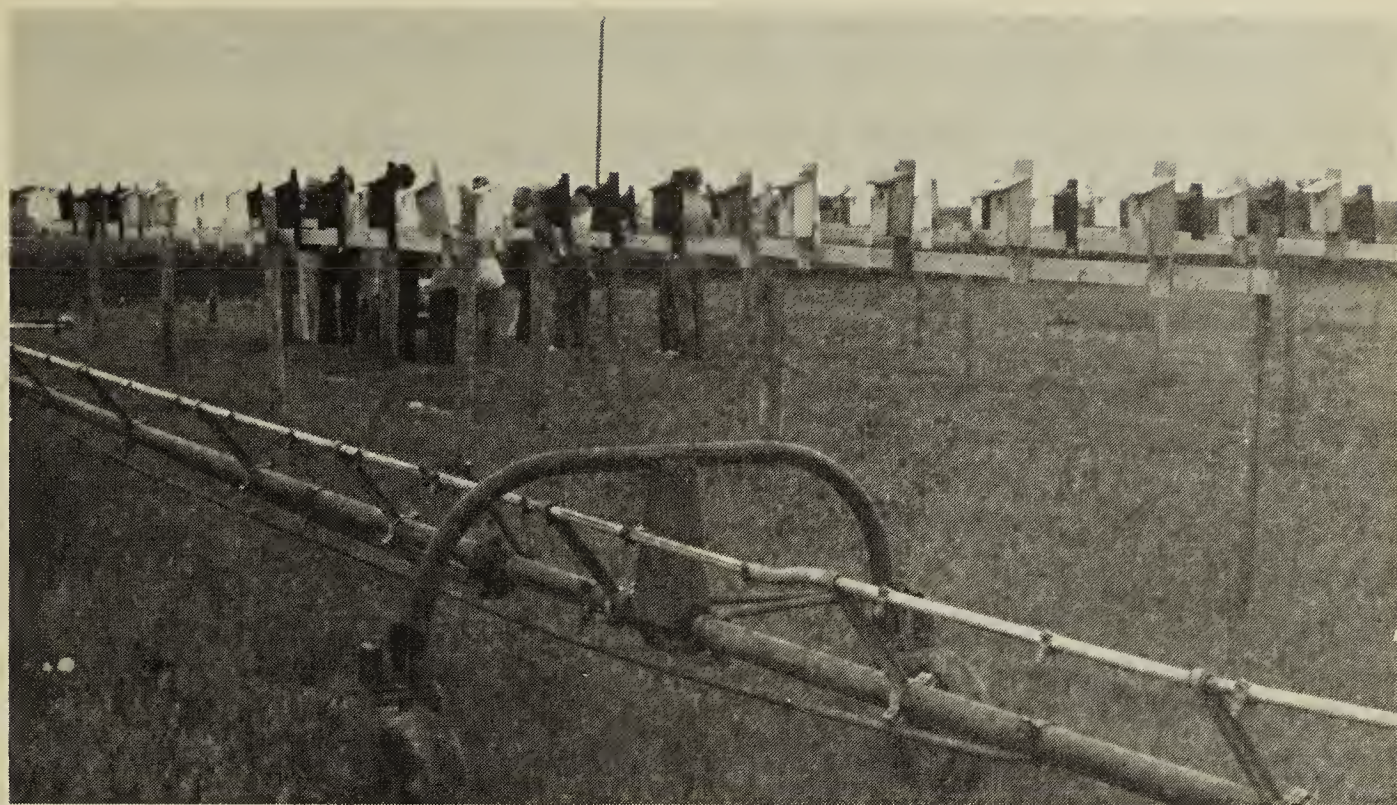
Again the Eastern Bluebird seemed to be concentrated in the sandy areas of the Carberry and Lauder Sandhills. It is interesting to note that Mr. and Mrs. J.B. Thomas, Hartney, reported three boxes where two broods of Eastern Bluebirds were raised.

Another case of hybridization was reported, this one by Peter Sawatzky in box No. 677 on the Carberry-Glenboro line. A Mountain Bluebird female and an Eastern Bluebird male successfully raised six young hybrids.

Other occupants of the nest boxes included a Chipping Sparrow, wasps and Thief Ants (*Solenopsis molesta*). The ants were in a nest box under observation by Linda Macson and were observed on extremely thin shelled eggs

Table 1. OCCUPANCY OF NEST BOXES IN THE BRANDON, MANITOBA, AREA — 1981

Occupant	Number of nestings
Mountain Bluebirds	727
Eastern Bluebirds	43
Bluebirds (not identified to species)	12
Cross Nesting Bluebirds (Eastern x Mountain)	1
Tree Swallows	680
House Sparrows	178
House Wrens	54
Starlings	2
Mice	60
Squirrels	8
Others: Thief ants, wasps, Chipping Sparrow and unidentified sparrow	1 each



Research into micro-climate of artificial nest boxes.

R.K. Lane

pierced with small holes. Whether the ants ate the eggs is unknown. The adult birds subsequently abandoned that nest.

Two cases were reported of Cowbird eggs, in boxes occupied by House Sparrows.

A few unusual nests were found. Mrs. Elsie Duthie, Lauder, found Mountain Bluebirds nesting in a stack of rye bales. Mr. Gordon Hammell, Erickson, reported a Mountain Bluebird nest in a hole (made either by rats or a woodpecker) in the fascia board of the eaves of a barn where an addition was under construction. Despite the disturbance the bluebirds raised a family. Barbara Robinson, Brandon, found a nest made of cassette tape.

While not everyone was able to report the remarkable success that Betty Shankland found on her line near Oak Lake resort, it was a successful year for The Friends of the Bluebirds. Betty, by the way, had 51 nestings in the 28 boxes on her line; 35 of these nestings were of Mountain Bluebirds.

A good supply of nest boxes is on

hand, thanks to the contribution of 500 boxes built since January 1981 by Mr. Raymond Gladden, Brandon.

This report was made possible through the work of The Friends of the Bluebirds. Added to the list published in our 20th annual report are these new members: *Altona* — Mrs. Krueger; *Basswood* — Rob MacDonald; *Birtle* — Brian Shaw; *Brandon* — Jean Cross, J.F. and Lillian McCullagh, Dilys Coburn and family, Ginger Young, Colleen Mitchell, Roger and Ann Smith, Herb Goulden, Kirsten McFarlane, Isabelle McGregor; *Carberry* — Nimkin Blue; *Douglas* — Earle Farley; *Erickson* — Harvey and Carol Pengelly, Gordon Hammell; *Forrest* — Jim Dixon; *Griswold* — Mrs. J.G. Cross; *Kirkella* — Stan McGuimpsey; *Lauder* — Mrs. Elsie Duthie; *Minnedosa* — Audrah Caughell, Stan Gugin; *Nesbitt* — 4-H boys Jeffrey Cunningham, David Cunningham and Brian Abbott; *Oak River* — Helen and Bill Cantelon, Mr. and Mrs. F. Mylrea, Mr. Wm. Davidson; *Portage La Prairie* — Garry Parker; *Rapid City* — Laurie and Bernice East; *Sandy Lake* — Valerie Miko; *Wesagaming* — Randy and Judy Mitchell and family.

VANDALISM IN A MANITOBA CASPIAN TERN COLONY

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On 16 June 1981, I visited several Manitoba colonial waterbird colonies on islands in southern Lake Winnipegosis. On a gravel reef off the south end of Coleman Island (51°55' N; 100°03' W), I found 23 bodies and 25 heads of adult Caspian Terns. At least one week was estimated to have passed since the vandalism had occurred. All bodies were some distance from their heads. Blood stains on the feathers indicated that the birds had been shot then beheaded. Since the reef is narrow and more heads than bodies were observed, it is suspected that other bodies and/or heads fell or were thrown in the water.

Although no remains of adult Double-crested Cormorants were found, the Cormorant colony on the reef had been reduced to fewer than a dozen active nests, down from 135.⁵ A significant number (100±) Cormorant nests had been destroyed, stones being on top of numerous eggs and/or young.

There were 30-40 Herring Gull nests also present on the island. Since young Herring Gulls were already out of their nests it was difficult to determine if that colony had been vandalized.

Despite the vandalism, 37 active Caspian Tern nests were recorded, appearing in an early development stage. Twenty-three contained two eggs, six contained one egg while eight were simple depressions in the lightly grassed, coarse sand. It was not determined if this represented the initial nesting attempt or renesting although no indication of previous nesting attempts were observed on the island. Coleman Island was not listed in the literature as a Caspian Tern colony site.⁶ Observa-

tions on 16 June 1981, indicated that roughly 100 adult Caspian Terns were attracted to the site.

Vandalism by humans is not new to Manitoba's colonial nesting waterbirds. Egg gathering for food is still practised in a number of areas, especially near remote northern communities. Provincial Fisheries reports document the Province's past active programs to reduce Double-crested Cormorant numbers on Lake Winnipegosis under pressure from commercial fishermen.^{3 4} Other colonial species may provide displacement behaviour for fishermen bent on destroying supposed sources of depleted stocks of commercially valuable fishes.

The Caspian Tern is often collected by scientists, shot by curious hunters, and taken for food in parts of its wintering range.¹ It is a highly vocal species which aggressively defends its colonies, a factor which may contribute to vandalism.

The Caspian Tern is considered rare in Canada according to the Committee on the Status of Endangered Wildlife in Canada.² A number of factors contribute to the overall low numbers and erratic Canadian distribution of the species. Manitoba is considered to harbour 59 percent of the breeding Canadian population.

¹LUDWIG, J.P. 1965. Biology and structure of the caspian tern (*Hydroprogne caspia*) population of the great lakes from 1896-1964. Bird Banding 36:217-233.

²MARTIN, M. 1979. Status report on caspian tern (*Sterna caspia*) in Canada. Com-

mittee on the Status of Endangered Wildlife in Canada. Canadian Wildlife Service. Ottawa, Ontario. 43pp.

³McLOED, J.A. 1943. Report on the crow-duck menace on Lake Winnipegosis. Man. Dept. of Nat. Res. Fisheries Br. Wpg. 17pp.

⁴McLOED, J.A. 1954. Continued studies on the double-crested cormorant on Lake Winnipegosis for the years 1953 and

1954. Man. Dept. of Nat. Res. Fisheries Br. Wpg. 9pp.

⁵VERMEER, K. 1969. The present status of double-crested cormorant colonies in Manitoba. Blue Jay 27: 217-220.

⁶VERMEER, K. 1970. Large colonies of caspian terns on Lake Winnipeg and Winnipegosis, 1970. Blue Jay 28:117-118.

AN EASTERN WOOD PEWEE NEAR BETHUNE

CHRISTOPHER I. G. ADAM, 2636 Argyle Street, Regina, Saskatchewan. S4S 0K1

On 3 July 1981, an Eastern Wood Pewee (*Contopus virens*) was encountered in the Qu'Appelle Valley 14 kilometres south of Bethune, Saskatchewan, by the author and Keith Neufeld, during investigations of natural areas for Saskatchewan Environment. The bird was first heard singing in late morning by the author, who immediately identified it as an Eastern Wood Pewee. The bird was approached to within 15 m, photographed, and was observed singing for 20 minutes. The author is familiar with the song of this eastern species, having lived for several years in eastern Canada, and had in fact heard one as recently as 28 June 1981 in Manitoba.

The pewee had a pale breast with light gray sides and a yellowish wash towards the belly, a pale throat, and an orange lower mandible, in contrast to the darker Western Wood Pewee (*Contopus sordidulus*). The song was the typical, whistled "pee-ah-wee, pee-ah-wee, pee-urr", constantly repeated. The pewee was still singing when the observers left the area around noon. The weather was hot and sunny.

Bob Luterbach of Regina had no luck finding the pewee at the same place at 0630 the next morning. The author is satisfied the location was revisited since Luterbach's description corresponded perfectly.

The pewee was found in a Manitoba Maple (*Acer negundo*) grove at the south end of an intermittent slough and near a gravel pit on the Qu'Appelle Indian Burial Site, an IBP (International Biological Program) area bordering the southern slope of the Qu'Appelle River. The exact location of the sighting is Sec. 2 - Twp. 19 - Rg. 24 - W2, which is approximately 45 kilometres northwest of Regina.

The bird was undoubtedly a summer visitant, probably having found its way westwards along the Qu'Appelle Valley. Belcher¹ and Callin² cite several occurrences in Saskatchewan. It is suspected as breeding regularly along the Qu'Appelle Valley as far west as Echo Lake.² One was heard calling 11 May 1968 by A. Binnie near Flying Creek, north of Regina.^{1 2}

¹BELCHER, M. 1980. Birds of Regina, revised edition. Saskatchewan Nat. Hist. Soc. Spec. Publ. 12, Regina, Sask.

²CALLIN, E. M. Birds of the Qu'Appelle, 1857-1979. Saskatchewan Nat. Hist. Soc. Spec. Publ. 13, Regina, Sask.

BIRD NOTES FROM SPRING VALLEY

FLOSSIE BOGDAN, Box 92, Spring Valley, Saskatchewan. S0H 3X0

Townsend's Warbler — 12 miles S.E. of Spring Valley

On 5 September 1981 an overcast day, with light rain and drizzle with the sun peeking through once in a while, I was in the kitchen preparing lunch when I heard what sounded like a bird hitting the living room window. I went to check and saw a bird lying beneath the window. The bird was sort of olive green with the brightest of yellows. I rushed out to get it before the cats would. It was a warbler I had never seen before — so to the books I went. I took "Birds of North America" (Robbins, Bruun, Zim and Singer) and with the bird in my hand I walked over to my son's house. Together Larry and I identified the bird as an immature Townsend's Warbler, by the dark cheek patch outlined by bright yellow and the very bright yellow throat.

I checked the "Saskatchewan check list" and "Birds of Regina" but found no mention of a Townsend's Warbler.

I placed the bird on a soft cloth in a box, about three hours later it was ready to fly, I took it to the garden and put it on a head of a sunflower, said "good-bye" and watched as it flew to the trees. It was such a pretty little thing.

That evening after the busy day of butchering chickens I had time to think

and I could have kicked myself. Why didn't we take some pictures? We had the bird in hand, but too late the bird was gone.

Had it been seen in a tree it would have been more difficult to identify, unless it posed for us.

Winter Wren — 12 miles S.E. of Spring Valley

Morning of 19 September 1980, I was out on my morning walk. As I approached a stand of willow trees a surprised little bird flew up from the underbrush of a mess of twigs overgrown with grass and weeds around the willows, it perched on a bare branch and gave out soft "tisks". I observed the bird for about 15 minutes before it disappeared under brush again. It was a tiny bird, with a short stubby tail and wrenlike actions, in the bright sunlight it appeared to be a rusty brown with an orange tinge to its breast.

Checking with "Birds of North America" (Robbins, Bruun, Zim and Singer) I identified it as a Winter Wren.

It was observed again the following day by daughter Gilbertha Leibelt, and myself — it again flew up from under the willows and perched on a dry twig.

Red-headed Woodpecker — 13 miles S.E. of Spring Valley

The afternoon of 16 July 1980 my son Allan phoned to let us know that there was a Red-headed Woodpecker at their trees, they have been watching it from their patio doors. I couldn't go just then but Larry and his wife Rhiannon went. By that time the Red-headed Woodpecker was on a power pole busy pecking away at something.

25 May 1980, 5 miles N.E. of Francis, Saskatchewan, my daughter, Gilbertha, looked out of her window and was surprised to see a Red-headed Woodpecker on their lawn, a furious

wind was raging that day so she snapped a picture of the Red-headed Woodpecker from her kitchen window.

All birds should be as easy to identify as the Red-headed Woodpecker! but then there would be no challenge and that's what makes bird watching so exciting.

CHECK-LIST OF ALBERTA BIRDS

The fourth edition (1981) of the Alberta bird check-list has recently been published. Three hundred and fifty-two species have been included on the list; an increase of 24 species over the third edition (1975). Of interest to bird enthusiasts is the inclusion of status and abundance codes for each species in the five natural regions: grasslands, parkland, foothills, boreal forest, and Rocky Mountains. All of this information, plus a map of Alberta showing the natural regions, is reproduced in a

pocket-sized foldout measuring approximately 4" x 8".

The increase in the number of provincial species over previous check-lists largely reflects the inclusion of a host of accidentally occurring species. The 24 new species are: Yellow-billed Loon, Green Heron, Fulvous Whistling Duck, Garganey Teal, Black Scoter, Eskimo Curlew, Surfbird, Sharp-tailed Sandpiper, Curlew Sandpiper, Long-tailed Jaeger, Iceland Gull, Thayer's Gull, Black-legged Kittiwake, Ancient Murrelet, Chimney Swift, Vaux's Swift, Black-chinned Hummingbird, Anna's Hummingbird, Williamson's Sapsucker, Chestnut-backed Chickadee, Pygmy Nuthatch, Eastern Bluebird, Black-throated Gray Warbler, and Black-throated Sparrow.

Check-lists can be purchased (\$1.00) from the Provincial Museum of Alberta Bookshop, 12845 - 102 Avenue, Edmonton, Alberta. T5N 0M6. — *Dr. Philip H. R. Stepney*, Curator of Ornithology, Provincial Museum of Alberta, Edmonton, Alberta. T5N 0M6.



Long-tailed Jaeger, Karrak L., N.W.T.

G.W. Beyersbergen

MOUNTAIN BLUEBIRD AMPUTEE

K. MORCK, 424 - 16th St. N.W.,
Calgary, Alberta. T2N 2C1

The excitement of finding a bird's nest full of eggs does not lose its thrill over the years.

When it is a pair of Mountain Bluebirds, with their exquisite blue dress, that have taken possession of a recently erected bird house, and have built a nest and filled the cup with eight pale blue eggs, the thrill and excitement burst forth anew once again. Perhaps it is seeing the promise of new life to come wrapped up in a tiny egg — a new hope, and the procreation of the species.

During the feeding and attending to the young in the nest box, the male bluebird unintentionally drew attention to itself by a continual but intermittent flirting of its wings when perched on a nearby branch with food in its beak for

the young. The stump of one leg could sometimes be seen hanging beneath the perching branch. The foot and the lower part of the leg were missing. It had great difficulty perching, usually resting its body low over its good leg on the branch, and sometimes was seen to slide down the branch slightly, and this occasioned the flirting of the wings. It also had great difficulty entering the nest box, and made several attempts before succeeding. (Balance was poor and it could not catch a hold at the hole with the good foot and leg). It had even a greater difficulty getting out of the box after feeding the young. Its head was seen to pop up and down several times inside the hole before it finally succeeded in getting out. On occasion I opened the door and let him out. This box was in a very shaded area along a road clearance rarely used, with high grass grown up along it and with aspen poplars and low shrubbery all around — at a little distance in front but close at the back of the tree on which the box had been placed.

Box erected	24 March, 1981
8 eggs	9 June, 1981
8 young	18 June, 1981
Nest vacated by last young one	2 July, 1981*

* Four feathered young found dead in the nest, mixed up with the nesting material when I cleaned it out.



Handicapped Mountain Bluebird

Kathleen Morck

SASKATCHEWAN CHRISTMAS MAMMAL COUNT — 1981

Compiled by WAYNE C. HARRIS, Box 414, Raymore, Saskatchewan. S0A 3J0

A total of 37 counts were submitted this year, recording 27 species during the count period. Both the number of counts and the number of species are down from last year. Snow cover for most of the province during the count period resulted in an overall increase in the number of species recorded per count.

Populations were generally stable. Increases are noted for shrews, Red Fox, weasels and mice. The first Lynx report since 1976 may indicate an increase of this species after many years of low populations. Moose also appear to be less common this year. Red Squirrel numbers are seemingly down although the very cold weather of the latter half of the count period may have forced them into their nests.

The highlights of this year's report are counts of 131 Mule Deer from White Bear and 150 Pronghorns at

Govenlock. The 210 White-tailed Jack Rabbits at Regina also deserves mention.

There were no really unusual species this year as one becomes more accustomed to having such summer species as Badger and Richardson's Ground Squirrels reported in late December.

For weather, coverage and participants of these counts please refer to the Christmas Bird Counts found elsewhere in this issue. Symbols found in the table are as follows:

- * Identified by tracks with estimated number of individuals in parentheses
- + Seen during count period but not on count day
- L Active lodges seen with number in parentheses
- H Species heard but not seen with number in parentheses



Pronghorn

Lorne Scott

1-1. CHRISTMAS MAMMAL COUNT

SPECIES	LOCATION	ASSINIBOIA 05 January	BANGOR 04 January	BIGGAR 22 December	BIG GULLY CREEK 02 January	EASTEND 02 January	ENDEAVOUR 25 December	FORT QU'APPELLE 19 December	FORT WALSH 19 December	GARDINER DAM 21 December	GLAMIS-WISETON 27 December	GOVENLOCK 20 December	HAFFORD 19 December	HARRIS 02 January
SHREW SP.									*(1)				*(2)	
RACCOON		2												
RED FOX					*		*(1)	*(1)	*(1)		*(1)	*(2)		*(1)
COYOTE					*	+	*(2)	*(1)	10		*(1)	*(7)	*(3)	
TIMBER WOLF														
ERMINE					*									
LEAST WEASEL														
LONG-TAILED WEASEL														
WEASEL SP.				*(2)			*(3)	*(1)	*(2)			*(5)		*(1)
MINK					*			+						
RIVER OTTER														
BADGER						+								
LYNX														
WHITE-TAILED JACK RABBIT		3		1	*	+	2		14	3	5	7	*(3)	5
SNOWSHOE HARE		5	1		*		*	*(2)	1				*(7)	
NUTTALL'S COTTONTAIL						5			10	3		2		
RICHARDSON'S GROUND SQUIRREL												1		
RED SQUIRREL					H(1)		1	6	22					
BEAVER												L(1)		
MEADOW VOLE							1	*(2)		1				
DEER MOUSE						+								
MOUSE SP.					*				*			*	*(2)	
MUSKRAT								1						
PORCUPINE					1			*(1)	2			2		1
ELK									48					
MULE DEER					*	8			18	1				3
WHITE-TAILED DEER		12		*(5)	*	+	*(2)	2	30	3	*(1)	13	*(4)	3
DEER SP.			2											
MOOSE									1					
PRONGHORN						+						150		
TOTAL SPECIES		4	2	3	11	8	8	10	14	5	4	11	6	6

1-2. CHRISTMAS MAMMAL COUNT

HUMBOLDT 29 December	INDIAN HEAD 20 December	KUTAWAGAN LAKE 28 December	LA RONGE 26 December	LAST MOUNTAIN LAKE 29 December	LUSELAND 29 December	MAIDSTONE BRIDGE 03 January	MOOSE JAW 26 December	RAYMORE 30 December	REGINA 26 December	ROUND LAKE 20 December	ROUND LAKE 03 January	SASKATOON 26 December	LOCATION SPECIES
						*(1)		*(1)					SHREW SP.
													RACCOON
*(3)	2			*(1)	*	*(1)	*(2)	*(2)	1	1	*(3)	1	RED FOX
*(2)	5	*		1	1	*(3)	*(1)	2	*(1)		*(14)	3	COYOTE
													TIMBER WOLF
								1			*(11)		ERMINE
					*(1)		*(1)				*(4)		LEAST WEASEL
*(1)	2						*(5)	*(1)					LONG-TAILED WEASEL
		*	*(1)	*	*(3)	*	*(1)	*(5)			*(16)		WEASEL SP.
	1						*(5)	*(1)			*(6)		MINK
													RIVER OTTER
								*(1)					BADGER
	*(1)												LYNX
*(6)	16	9		37	*	*(10)	6	31	210	1	*(6)	10	WHITE-TAILED JACK RABBIT
*(12)	3	*(2)	*(7)		1	*(5)	6	18	*(3)	3	*(80)	3	SNOWSHOE HARE
													NUTTALL'S COTTONTAIL
													RICHARDSON'S GROUND SQUIRREL
	3		*(2)			1		H(1)		4	*(16)		RED SQUIRREL
							*(2)						BEAVER
							*(1)		1		*(10)		MEADOW VOLE
									*				DEER MOUSE
	*(4)				*	*	*(3)	*	*		*(6)	*	MOUSE SP.
								L(3)					MUSKRAT
	+	*(2)			1	2		4			1		PORCUPINE
													ELK
					9								MULE DEER
*(12)	21			4		13	1	7	*(3)		1	2	WHITE-TAILED DEER
													DEER SP.
													MOOSE
													PRONGHORN
6	11	5	3	5	9	10	12	15	8	4	13	6	TOTAL SPECIES

1-3. CHRISTMAS MAMMAL COUNT

SPECIES	LOCATION	SEMANS 03 January	SCOTT 31 December	SKULL CREEK 26 December	SPIRIT LAKE 20 December	SPRING VALLEY 30 December	SQUAW RAPIDS 24 December	TISDALE 25 December	WAUCHOPE 26 December	WEBB 21 December	WHITE BEAR 30 December	WHITEBEECH 02 January	TOTAL NUMBER OF COUNTS PER SPECIES OR GROUP
SHREW SP.					*(3)		*				*(4)		7
RACCOON													1
RED FOX		*(2)			*(2)	1	*		*(1)				23
COYOTE				2	*(4)	+	*	*(10)		+	17	*(1)	27
TIMBER WOLF												*(4)	1
ERMINE							*						4
LEAST WEASEL		*(2)		+							*(2)		6
LONG-TAILED WEASEL		+		1					1		*(2)		8
WEASEL SP.					*(4)		*						16
MINK				*(2)	*(1)	+	*						10
RIVER OTTER							*(2)						1
BADGER						2							3
LYNX													1
WHITE-TAILED JACK RABBIT		*(2)	1	4	*(11)	3	*	*(20)	1		6		32
SNOWSHOE HARE		+	*(10)		5		7	*(15)	*(10)			*(25)	26
NUTTALL'S COTTONTAIL				8		+					7		7
RICHARDSON'S GROUND SQUIRREL													1
RED SQUIRREL					4		14					+	13
BEAVER					L(2)		L(2)						4
MEADOW VOLE				*(10)		+			*(2)				9
DEER MOUSE		*(2)							*(3)				4
MOUSE SP.				*(30)	*(9)	+	*				*(100)		17
MUSKRAT													2
PORCUPINE			*(6)	*(2)	*(3)		*				*(1)		16
ELK							*						2
MULE DEER						2					131		8
WHITE-TAILED DEER		2		6	6	+	6	*(3)	14			*(1)	29
DEER SP.													1
MOOSE							*						2
PRONGHORN						+				+	+		5
TOTAL SPECIES		7	3	10	12	11	16	4	7	2	10	5	

THE HUNTER'S ROLE IN MOOSE MANAGEMENT

DOUG ELSASSER, Saskatchewan Tourism and Renewable Resources, 3211 Albert Street, Regina, Saskatchewan. S4S 5W6

When the new Moose Management Program was introduced in 1977, a number of people were sceptical. "Don't Shoot Her! You're Breaking the Law" was the blunt message sportsmen received. A selective harvest of calf or bull Moose was something new for Saskatchewan hunters. Access to moost hunting had for several years been limited by draw seasons. Moose herds were still faltering after the deadly 1973-74 winter.

The new program was introduced only after wildlife managers in Saskatchewan had reviewed moose management programs throughout the Northern Hemisphere; and settled on the promising Swedish strategy: Protect prime breeding stock — expand populations and hunting opportunity at the same time. The program's success depended on support by resident hunters. Game identification was stressed more than ever before.

It appears that the effort was worthwhile. Indications are that the new Moose Management Program is working. Hunters can take credit for this. They responded to the challenge and proved that responsible moose management was indeed "their game."

Protecting cow Moose during the regular seasons is the backbone of this new management strategy. Evidence collected at check stations by the provincial Wildlife Branch shows that the average age of cow Moose in the wild has increased since 1977. More female animals are now alive and well in the productive 5 to 10 year-old class.

Prime-aged cows have healthier twins, and are better able to care for them. As the crop of moose calves increases each year, so will the population continue to expand to fill available habitat.

Hunter success in the 1980 regular season was 39 percent. This is the highest success rate recorded since the program began. On the average, it took hunters 11.3 days to bag a calf or bull Moose. This is much lower than the 17.8 days per animal bagged figure of 1979, and suggests that more moose are available to sport hunters.

In terms of outdoor recreation supplied, the 1980 regular season was equal to 1979 with 44,000 hunter-days recorded. ("Hunter-days" are a measure of time spent afield in pursuit of game. If you hunted seven days for Moose last year, your hunting effort for that species was seven "hunter-days"). Some 11,000 persons purchased regular season moose licences last fall. Another 3,000 obtained a special moose licence. This is a vast improvement from the "draw days" when only a percentage of moose hunters were allowed a licence. Now, everyone who cares to hunt calf or bull Moose in any open zone has only to buy a licence.

A statistic of concern to Wildlife Branch biologists is the small harvest of calf Moose in 1980. From a three-year average of 27 percent, the calf harvest fell to 19 percent last fall. This put increased pressure on bull Moose. In light of these figures, a number of suggestions were made to the Game

Advisory Committee to increase the harvest of young animals. Permitting the harvest of two calves or one bull per hunter was considered. So was a "calf only" season. Finally it was decided to appeal directly to moose hunters, "Select more calves in the regular seasons." Accurate returns of the 1981 Hunter Questionnaire will tell wildlife managers if more calves have been harvested this fall.

Killing a calf Moose may not appeal to ardent trophy hunters or people who have been influenced by the "Bambi Syndrome"; but it is sound wildlife management in northern climates to harvest young-of-the-year animals. Calves suffer a high death rate their first winter if conditions are severe. They are more affected by deep snow and cold temperatures than adult animals. Calves, because they are growing so fast, don't always have time to store sufficient energy reserves (fat) which they need to withstand an extended period of cold and deep snow. In Saskatchewan and other "four-season" climates, big

game animals have two distinct energy cycles: positive and negative. In winter, animals are into the negative cycle because they cannot consume enough food to cover their energy expenditures. Calories burnt to maintain body heat and wade through deep snow are drains on energy reserves. In the negative cycle (which lasts until "green-up" in the spring), animals rely on fat reserves stored in their bone marrow, under the hide, and around internal organs to supplement a low-protein winter diet. Calf Moose, especially if they are born late, frequently cannot store enough fat to last them through a prolonged winter. Consequently they starve or fall easy prey to predators. Harvesting them in the autumn takes pressure off prime breeding stock and has little effect on the survival of each year's calf crop. This is why it is sound management to select calf moose.

Since 1977, hunters have shot more calf and yearling Moose than adults in each regular season (Figure 1). This is a positive step towards stabilizing Moose

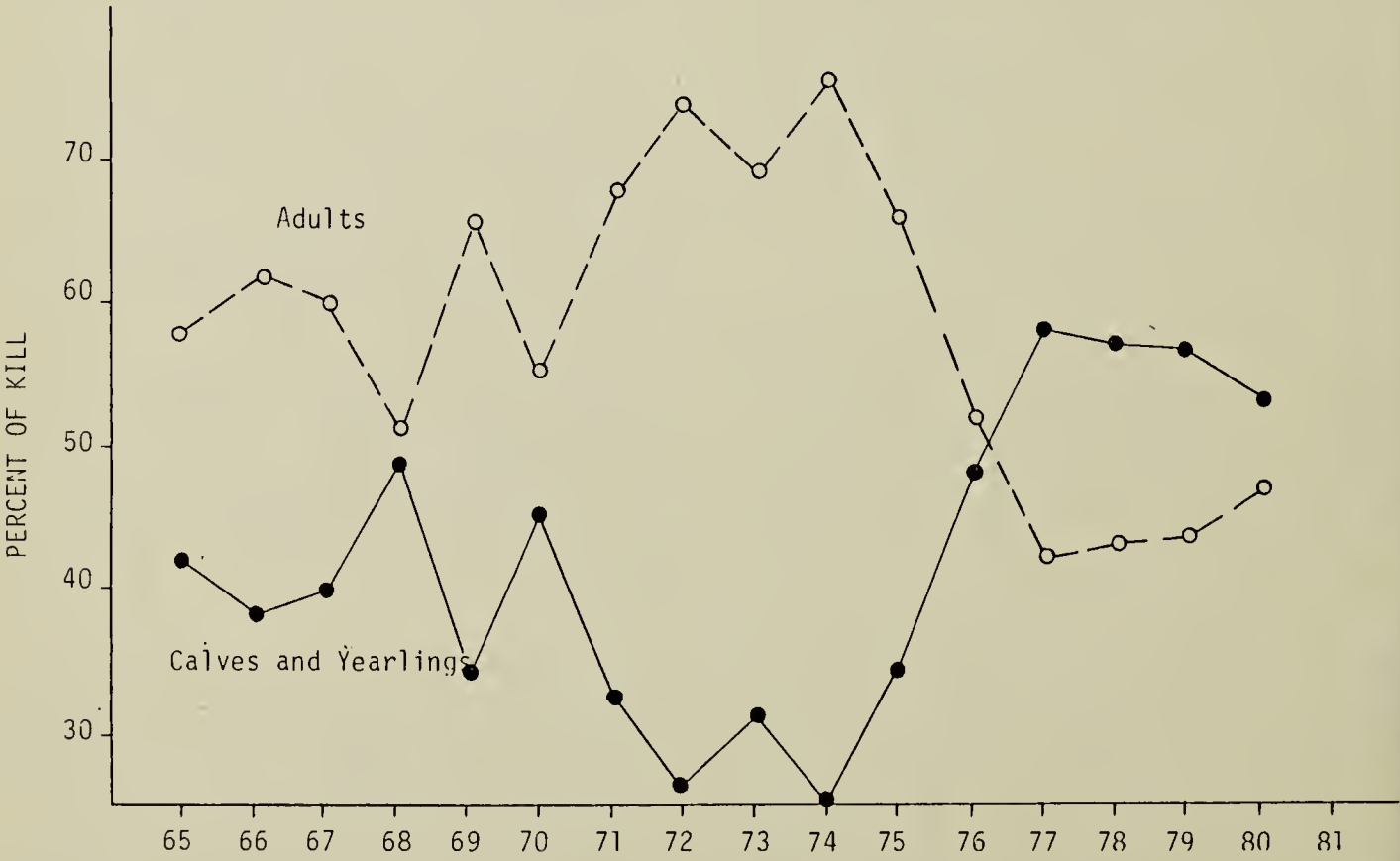


Figure 1. Age structure of Moose harvested in Saskatchewan, 1965 - 1980, as determined from checking station samples.

populations. Again, in order to improve the new Moose Management Program, hunters are asked to select more calf moose.

Some hunters have asked themselves, "Are bull Moose being over-harvested?"

To keep track of this serious possibility, the Wildlife Branch sponsors check stations and hunter questionnaires to gather information about the moose harvest. We also fly 10,000 kilometres (6,000 miles) of moose survey transects to collect population data. If too many bulls were being taken it would show up in two important areas. First, the average age of bulls in the harvest would decline; and secondly, the fertility rate of cows would drop in response to inadequate breeding stock. Neither of these is the case.

The average age of bulls taken

through checking stations averaged 3.88 years in 1980 compared with 3.46 years in 1977. A veterinarian was hired during the 1980-81 winter to conduct pregnancy tests on cow Moose in management zone 27. He found that 94 percent of cows tested were bearing calves, 25 percent carried twins. These indicators suggest that bull Moose are not presently being over-harvested, but the possibility will have to be guarded against.

The Moose herd in Saskatchewan has increased substantially since 1977. Densities now exceed one Moose per square mile in most habitat types south of the Precambrian Shield. Where low populations are in evidence, no special season is held. Zones 28, 29 and 31 have warranted no special season for several years. Despite factors not found in Sweden like the year-round hunting

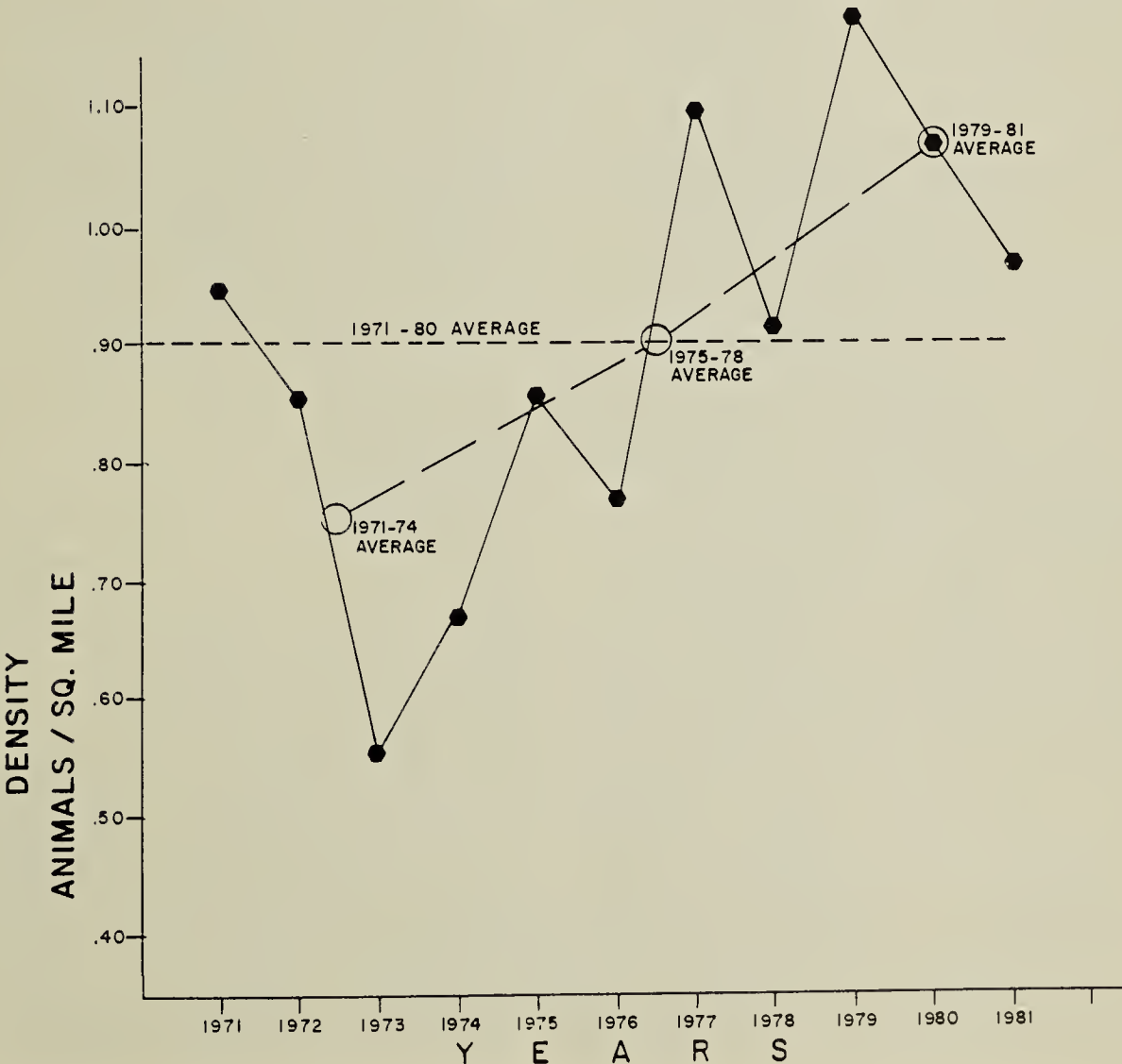


Figure 2. Provincial Moose population density

rights of Treaty Indians, predators like wolves and bear, and more severe winters, the new Moose Management Program has proven that Saskatchewan herds can expand and hunting recreation can increase both at the same time (Figure 2).

As long as hunters co-operate — meaning that they protect cow Moose during the regular season, select more calves, and provide the Wildlife Branch with feedback on hunting activities so

we can keep track of the resource, there is no reason (barring a disastrous winter) why Moose herds should not continue to expand. Moose hunters are responsible for the continued success of the Moose Management Program. They are the true wildlife managers because their actions affect moose populations directly. If you are in the forest this coming fall searching for Moose, and you see one, please be sure before you shoot!



Moose

G.W. Beyersbergen

JUNIOR NATURALISTS

SPRING

The abundant snow of winter has melted and formed numerous potholes all over. Sure, it still freezes at night and, in the early morning, I can try to break the thin crust of ice by throwing a couple of rocks at it. They break through and make series of ripples in the water underneath . . .

Warming up in the morning sun, I go for a walk and then . . . woo-ho, woo-ho . . . There they are! Whistling Swans! Sure sign of spring, forming pure white Vs in the sky . . . In a little while will come the geese and ducks, then the songbirds . . . Now my heart is warming up . . . and I have tears in my eyes. After this long winter, it isn't too soon! It makes me feel like exploring for spring everywhere! Horned Larks, with their delicate tinkling song, are being flushed more and more often from the roads as we drive. And here is a ground squirrel already, poking its nose through the opening of its hole, through the snow! The hole is laced with tracks similar to a mouse's but larger: ,",

There, near that slough . . .! I run over. Pussy-willows! I cut one or two small branches for my house. Do you know that if you don't put them in water they will stay nice for several years, just as they were when you found them? If you put them in water, the catkins will develop and mature, and you will be able to tell if they are male (powdery) or female (sticky). The shrub you took them from produces only one kind: it is, itself, male or female.

Willows shade well and the snow underneath and in between them is full of bush rabbit (Snowshoe Hare) tracks. Oh! There goes one! Its back is turning brown already! I guess it must feel spring too!

Black-capped Chickadees are singing their spring song as well as their usual chickadee-dee-dee that makes them so easy to identify. It comes from that aspen bluff . . . It's a pair, working hard at excavating a nest hole in a dead stump, about 7 feet from the ground. Apparently, they build a new one each year, I wonder why . . . Opportunists like the House Wren, with its short tail cocked over its back, often raise a family in their abandoned holes.

Well, it's time to go back home. At least, now I know I will work a thousand times better, just because spring is here . . .

You can see spring too, and smell it when the snow melts and the grass and other plants start to grow. Here are some spring birds and flowers. Guess in which order the following birds will return this spring. Then, keep a record of the order of their return and count five points for each one you get right.

To do this, list the 11 species in a column. You may add more to make the game more challenging if you wish. On the left side, number the birds from 1 to 11 in the order of expected arrival date. Then, on the right, number the birds in the order you actually see them. When the migration is over, count 5 points for each bird which has the same number on both sides. Your maximum score for the 11 species will be 55.

You can also play this game for the blooming time of flowers. Good luck!

Birds

Crow, Red-winged Blackbird, Mountain Bluebird, Horned Lark, Western Meadowlark, Yellow-Rumped Warbler (Myrtle), Mallard, Blue-winged Teal, Ring-billed Gull, Franklin's Gull, American Robin.

Flowers

WILD

False Solomon Seal (*Smilacina stellata*)
 Field Chickweed (*Cerastium arvense*)
 Prairie Crocus (*Anemone patens*)
 Nodding Onion (*Allium cernuum*)
 Silverweed (*Potentilla anserina*)
 Golden Bean (*Thermopsis rhombifolia*)
 Moss Phlox (*Phlox hoodii*)
 Narrow-leaved Puccoon (*Lithospermum angustifolium*)

GARDEN

Bleedingheart (*Dicentra spectabilis*)
 Snow-in summer (*Cerastium tomentosum*)
 Columbine (*Aquilegia*)
 Lupine (*Lupinus*)
 Phlox (*Phlox*)
 Tulip (*Tulipa*)
 Lily of the Valley (*Convallaria majalis*)



Spring run-off

Gary W. Seib

PHOTO CONTEST

I am plesed to say that the 2 winners of the photo contest did send a note about their pictures.

Here is what Nigel Caulkett has to say:

The picture of the Calla Lily was taken in Pasquia Hills. After a hike into the hills, we found the lilies growing in a small lake. After about 5 minutes of lying down in a patch of nettles, the sun finally caught the lily and I took the picture.

and Sean Morrissey:

I took this picture in the spring 1981, while banding Great Horned Owls with Dr. Stuart Houston, south of St. Louis, Sask. The young owl had fallen out of the tree and was sitting at the bottom of it. After banding it, we put it on a branch close to the nest, where the parents

could find it and where it would be out of reach of a hungry coyote.

I have many fine pictures taken on this trip and very fond memories to go with each. I would like to thank Dr. Houston for giving me a better understanding of the Great Horned Owl.

I have also had the privilege of banding Marsh, Red-tailed, Cooper's and Ferruginous Hawks with him.

I was also able to help John Polson with his study of the Richardson's Merlins, but that is a different story.

I hope that we will hear from more Juniors in the future. Have a good spring! — Paule B. Hjertaas, 919 Cook Crescent, Regina, Saskatchewan. S4X 2L9.

NATURE LIBRARY

WILD MAMMALS OF WESTERN CANADA

ARTHUR AND CANDACE SAVAGE.
1981. Western Producer Prairie Books,
Saskatoon, Saskatchewan. 209 pp. 100
color photos. \$34.95.

In this excellent book Arthur and Candace Savage attempt to present a large body of scientific knowledge in a format for the layman. They are remarkably successful. The text is easy to read, yet packed with information. This high information content makes the book attractive to the keen naturalist and professional biologist as well as to the layman.

The overall quality of the book is high. The 100 color photos, many of which cover full pages, are well reproduced. I could find no problems with the binding or printing and, most amazingly, not a single typographical error.

Unfortunately, despite its title, this book does not cover all Western Canadian mammals. After an introduction to mammology and Western Canadian mammals, one or more representatives of each order are discussed. Of the 162 species listed in the checklist at the end of the book, only 70 are dealt with in detail. Most of the larger, well known carnivores and ungulates are included. Thus the text deals with all 7 lagomorphs, all 11 cloven-hoofed mammals, and 23 of 24 carnivores, while only 2 of 13 insectivores and 2 of 16 bats are discussed.

The authors give a good outline of the natural history of each species chosen for discussion. Their treatment includes

one or more color photographs and a map of the North American range. Each section of the text was submitted to experts for review. This undoubtedly contributed to the lack of errors in the text.

A small number of errors, usually generalizations or statements of hypothesis as facts, have slipped into the text. For example Racoons are said to have larger litters in their northern range, "presumably, in part, as compensation for high wintertime losses." In fact litter size in racoons, like other animals, is probably adapted to what the parents can usually raise, not to anticipated mortality. To be fair the authors did qualify their statement with "presumably."

On page 172 the authors argue that Mountain Sheep, which cannot defend their lambs from Cougars and wolves, have a weak maternal bond and abandon the lamb if attacked. Moose and pronghorns are said to form strong maternal bonds. To explain this the authors remind us that a healthy moose can repel wolves but "pronghorns usually only have to deal with coyotes." This conveniently ignores the Prairie Wolf which undoubtedly preyed on pronghorns until exterminated by man.

Range distribution maps do not include the presettlement ranges of species such as the wolf and the checklist does not include the extirpated Swift Fox and Black-footed Ferret. The range maps have some minor inaccuracies, parts of the Saskatchewan range of Moose and Elk are missed while the Racoons hasn't quite extended as far as shown. These are small errors considering the maps cover all of North America.

One final feature which I like is inclusion of a 24-page bibliography arranged to follow subjects in the text. This bibliography, while not complete, directs the reader to further information and greatly increases the book's value as an introduction to mammals. *Wild Mammals of Western Canada* will therefore be a valuable addition to school and public libraries as well as to private collections. — Reviewed by Dale G. Hjertaas, 919 Cook Crescent, Regina, Saskatchewan. S4X 2L9.

NATURAL HISTORY NOTEBOOK NO. 3

National Museum of Natural Sciences,
Ottawa, 1979.

From Anteater to Zebra, this 3rd notebook covers 52 species of most interesting animals from all continents. Each animal is discussed in 1 page consisting of a black and white drawing and 100-150 words of text, mainly covering

behavior. The opposite page is blank for notes. Each plate has previously been published individually in newspapers across the country but they were combined in booklet form in response to many requests.

Unfortunately, each plate is unrelated to the others and the booklet lacks a theme. The illustrations are of excellent quality and the text very informative in spite of its conciseness. The distribution of the species is not always included; it especially disturbed me when the author did not mention the White Pelican as breeding in Canada as well as the U.S. I also wonder how useful the blank page is, considering that 50 species are foreign to North America and most are rarely present in zoos across the country?

Altogether an easy-to-read, informative booklet, beautifully laid out and of very general interest, but not for you if you are looking for information on Canadian species. — Reviewed by Paule B. Hjertaas, 919 Cook Crescent, Regina, Saskatchewan. S4X 2L9



Cougar

Wayne Lynch



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